Technical Reports

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NEWSLETTER IN CENTER FOLD

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BIBLIOGRAPHY OF Technical Reports

August 1950

CHEMICAL AND ALLIED PRODUCTS

Agricultural Chemicals

CHEMICAL STUDIES ON FUNGICIDES, PART III: SYNTHESIS OF A-BROMOAMIDES, by Warren E. Weaver and Wilson M. Whaley. U. S. Naval Research Laboratory. Jul 1948. 13p fold tables Mi $1.75, Ph $2.50. PB 100905

Description of synthesis and physical properties of forty-six -bromoacetamides and -bromopropionamides. For pt. I see PB 100904. NRL C-3326.

Plastics and Plasticizers

MINUTES OF A CONFERENCE OF THE KUTEKO SUB-COMMITTEE II, DISCUSSING VINYL CHLORIDE BASED PLASTICS, WITH SPECIAL REFERENCE TO PLASTICIZERS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1942. 16f (Text in German) Mi $1.75 Enl Pr $3.75. PB 110012

1. Plasticizers - Germany 2. Plastics, Vinyl chloride - Germany 3. KUTEKO (Kunstoff-Technische Kommission) 4. Micro BIOS FD 2461/49, Frames 1-15.

Abstract available as PB 110012s. 1p. Mi $1.25, Ph $1.25.

PLASTIC PRODUCTS DESMOPHIN, DESMODUR AND DESMOSIT. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1942-1944. 48f tables (Text in German) Mi $2.50, Enl Pr $7.50. PB 100927

1. Plastics - Polymers - Germany 2. Desmophen (Trade name) 3. Desmodur (Trade name) 4. Desmosit (Trade name) 5. KUTEKO (Kunstoff-Technische Kommission) 6. Micro BIOS FD 1559/49, Frames 1-43.

Includes English abstract. Abstract available as PB 100927s. 2p. Mi $1.25, Ph $1.25.

PLASTIC PRODUCT G 58 DICHLORO-CHLORIDE. I. G. Farbenindustrie A. G., Schkopau, Ger. May 1942. 5f (Text in German) Mi $1.25, Enl Pr $1.50. PB 110010
1. Plastics - Tests - Germany 2. G 58 (Plastic) 3. Micro BIOS DOCS 2578/1326 4. Micro BIOS FD 2214/49, Frames 1-4.
Abstract available as PB 110010s. 1p. Mi $1.25, Ph $1.25.

THERMAL EVALUATION OF FORMVAR RESIN, by Thomas D. Callinan. U. S. Naval Research Laboratory, Washington, D. C. Dec 1948. 21p diagrs, graphs, tables Mimeo: $.75. PB 100862
Description of method of evaluating and predicting life of plastic insulation based upon comparison of actual values of electrical properties with those expected of a postulated "idealized' plastic. Critical analysis, at various temperatures and after aging under special conditions, is made of the properties of Formvar, a very suprior insulant, and the values obtained for loss factor and dielectric constant (shown graphically) are taken as representing the ideal for comparative purposes. NRL C-3397.

Paints, Varnishes and Lacquers

BRUSH UP ON YOUR PAINTING. U. S. Bureau of Ships. n.d. 31p drawings Available from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 110089
1. Ships - Painting 2. Paints, Marine 3. NAVSHIPS 250-222-43.
Technical Publication No. 17.

Chemical Engineering and Equipment

COMPARATIVE DATA ON TVP AND CARBUROL CRACKING PLANT AND PROCESS. Hoesch Benzin A. G., Dortmund, Ger. 1937-1943. 67f drawings (Text in German) Mi $3.00, Enl Pr $10.00. PB 100932
1. Butadiene - Preparation - Germany 2. Cracking, Catalytic - Germany 3. Carburol (Cracking system) 4. TVP (True Vapor Phase cracking system) 5. Gewerkschaft Viktor, Castrop-Rauxel, Ger. 6. Ruhrchemie Kogasin 7. Wilke Werke, Brunswick, Ger. 8. Micro BIOS FD 87/48, Frames 1-51.
Abstract available as PB 100932s. 1p. Mi $1.25, Ph $1.25.

FLOWSHEET OF THE DIORITE PROCESSING PLANT, NO. L 16788-2. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Jun 1945. 5f drawings only (Legends in German) Mi $1.25, Enl Pr $1.50. PB 100928
1. Diorite - Plants - Germany 2. Micro BIOS DOCS 3060/2977/2 3. Micro BIOS FD 796/48, Frame 1.
Abstract available as PB 100928s. 1p. Mi $1.25, Ph $1.25.

LABORATORY AND FLIGHT TEST OF THE BENDIX 8 LITER LIQUID OXYGEN CONVERTER (MODEL XE795826-1), by Vincent B. Diebold. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Mar 1950. 16p photos, drawings, graphs Mi $1.75, Ph $2.50. PB 110068
1. Converters, Liquid oxygen 2. Oxygen, Liquid 3. XE795826-1 (Liquid oxygen converter) 4. AAF TSEAA MR 660-104-J.

METHODS FOR CATALYTIC CRACKING, HYDROGENATION, AND RELATED PROCESSES. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1930-1944. 321f drawings, diagr (Text in German) Mi $9.00, Enl Pr $45.00. PB 110052
1. Catalysis - Methods - Germany 2. Hydrogenation - Methods - Germany 3. Alkylation - Methods - Germany 4. Benzene - Distillation - Germany 5. Molybdenum - Production - Germany 6. Patents - Germany 7. Micro BIOS FD 1038/47, Frames 1-293.
Abstract available as PB 110052s. 2p. Mi $1.25, Ph $1.25.

PLANT AND PROCESS FOR THE PRODUCTION OF PALATINOL. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1943. 61f diagr (Text in German) Mi $3.00, Enl Pr $10.00. PB 100929
1. Palatinol (Trade name) 2. Micro BIOS FD 2579/47, Frames 1-61.
Abstract available as PB 100929s. 2p. Mi $1.25, Ph $1.25.

PROCESSES FOR THE PRODUCTION OF SACCHARINE AND OTHER SYNTHETIC SWEETENING SUBSTANCES. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1942-1946. 7f diagrs (Text in German and English) Mi $1.25, Enl Pr $2.50. PB 100937
1. Benzoic acid, o-Chloro - Production - Germany 2. Benzoic acid, o-Sulfo - Potassium salt - Germany 3. Saccharin - Production - Germany 4. Micro BIOS FD 1405/49, Frames 1-6.
Abstract available as PB 100937s. 1p. Mi $1.25, Ph $1.25.

PRODUCTION OF ACETALDEHYDE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1935-1941. 65f drawings (Text in German) Mi $2.75, Enl Pr $8.75. PB 110029
1. Acetaldehyde - Production - Germany 2. Micro BIOS FD 2052/47, Frames 1-57.
English abstract included. Abstract available as PB 110029s. 1p. Mi $1.25, Ph $1.25.

Miscellaneous Chemicals

BEITRAG ZUR KENNTNIS DER KATALYTISCHEN ISOMERISIERUNG VON OLEFINEN. (CATALYTIC ISOMERIZATION OF OLEFINS), by H. Richter. Kaiser Wilhelm Institut für Kohlenforschung, Mülheim, Ger. 1942. 217f drawings, graphs (Text in German) Mi $7.75, Enl Pr $28.75. PB 100784
1. Hydrocarbons - Isomerization - Germany 2. Micro BIOS FD 70/48, Frames 163-365.
Abstract available as PB 100784s. 1p. Mi $1.25, Ph $1.25.

CORRELATION OF PHYSICAL PROPERTIES WITH MOLECULAR STRUCTURE FOR DICYCLIC HYDROCARBONS I. 2-N-ALKYLBIPHENYL, 1,1-DIPHENYLALKANE, A,W-DIPHENYLALKANE,1,1-DICYCLOHEXYLALKANE, AND A,W-DICYCLOHEXYLALKANE SERIES, by P. H. Wise, K. T. Serijan, and I. A. Goodman. U. S. National Advisory Committee for Aeronautics. May 1950. 33p diagrs, graphs, tables Mi $2.25, Ph $5.00. PB 110039
Physical properties of some 1,1-dicyclohexylalkane, α,ω-dicyclohexylalkane, 2-n-alkylbiphenyl, 1,1-diphenylalkane, and α,ω-diphenylalkane hydrocarbons were determined. For the three aromatic series, as chain length of the substituent alkyl group is increased: 1. net heat of combustion per unit volume increased 2. melting point was generally lower 3. boiling point and viscosity increased uniformly. Comparison of saturated hydrocarbons with the corresponding aromatic hydrocar-

bons showed: 1. net heat of combustion was about 7 percent lower 2. melting point was generally lower 3. boiling point was a few degrees lower 4. viscosity was higher. NACA TN 2081.

ETHYLENE HYDROGENATION. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1944. 168f (Text in German) Mi $6.25, Enl Pr $22.50. PB 110025
1. Ethylene - Hydrogenation - Germany 2. Micro BIOS FD 2162/47, Frames 1-167.
Abstract available as PB 110025s. 1p. Mi $1.25, Ph $1.25.

EXPERIMENTS IN THE AROMATIZATION OF HEPTENE AND HEPTANE. Ruhrchemie A. G., Oberhausen-Holten, Ger. Feb 1938-Mar 1940. 60f graphs, tables (Text in German) Mi $2.75, Enl Pr $8.75. PB 100819
1. Heptane - Aromatization - Germany 2. Heptene - Aromatization - Germany 3. Toluene - Production - Germany 4. Micro BIOS FD 5459/47, Frames 1-60.
Abstract available as PB 100819s. 2p. Mi $1.25, Ph $1.25.

FERRIC AND FERROUS CHLORIDE, by Dr. Müller. I. G. Farbenindustrie A. G., Bitterfeld, Ger. Jul 1947. 4f drawings Mi $1.25, Enl Pr $2.50. PB 100767
1. Ferric chloride - Production - Germany 2. Micro BIOS FD 1415/49, Frames 1-2.
Abstract available as PB 100767s. 1p. Mi $1.25, Ph $1.25.

FURTHER RESEARCH ON THE HYDROLUBE FLUID, by J. E. Brophy, V. G. Fitzsimmons, J. G. O'Rear, T. R. Price and W. A. Zisman. U. S. Naval Research Laboratory, Washington, D. C. Sep 1949. 45p photos, drawings, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $1.25. PB 110129
Recent work at the Laboratory on Hydrolubes (glycol-water solutions containing a water soluble polymer and corrosion inhibitors) has been aimed at decreasing the wear rate in hydraulic pumps and swelling rate of various types of hydraulic packing without causing a loss in corrosion inhibition. Results of studies of Hydrolubes U, U-2, U-3, and U-4 have indicated that Hydrolube U-4 is the most promising non-inflammable hydraulic fluid developed to date. It presents adequate protection for elastomers and, with the exception of high-magnesium alloys, it is a safe medium for all important aircraft metals. NRL R 3545.

MANUFACTURE AND REGENERATION OF CATALYSTS. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1937-1948. 103f graphs, tables (Text in German) Mi $4.50, Enl Pr $15.00. PB 100824
1. Catalysts - Reactivation - Germany 2. Cobalt nitrate - Copper elimination - Germany 3. Thorium - Recovery - Germany 4. Thorium oxide - Germany 5. Micro BIOS FD 5437/47, Frames 1-102.
Abstract available as PB 100824s. 2p. Mi $1.25, Ph $1.25.

MANUFACTURE OF CATALYST MASSES FOR THE CATALYTIC OXIDATION OF SO_2. Metallgesellschaft A. G., Frankfort, Ger. 1931-1934. 116f photos, drawings, tables (Text in German) Mi $4.75, Enl Pr $16.25. PB 100966
1. Sulfur dioxide - Catalyst - Germany 2. Sulfur dioxide - Oxidation - Germany 3. BIOS FR 335 LD 4. Micro BIOS FD 4837/47, Frames 1-113.
Abstract available as PB 100966s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 335 p. 187-88.

PHENOTHIAZINE-TYPE ANTIOXIDANTS AND THEIR MODE OF ACTION, by H. Ravner, C. M. Murphy, Jr. and N. L. Smith. U. S. Naval Research Laboratory, Washington, D. C. Jan 1950. 23p tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.75. PB 110128

The oxidation inhibition action of phenothiazine-type compounds on lubricating oils was investigated in a dynamic system over the temperature range 100° to 175° C in the presence of metal catalysts. Many of the compounds indicated activity at the higher temperatures. Resonance-stabilized free radicals, capable of reducing peroxides, were postulated to be the actual inhibiting configurations. It was demonstrated that the inhibitors were of the regenerative rather than the sacrificial class. Comparable effectiveness was found in many of the oxygenated derivatives of phenothiazine, apparently because of their ability to exist as resonance-stabilized free radicals. Effectiveness of phenothiazine analogues correlates with oxidation potentials. NRL R 3546.

PRODUCTION OF A BENZALDEHYDE-2,4-DISULPHONIC ACID (SCHLEUDERSALZ). I. G. Farbenindustrie A. G., Höchst, Ger. n.d. 8f drawing (Text in German and English) Mi $1.25, Enl Pr $2.50. PB 100884

1. Benzaldehyde-2,4-disulphonic acid - Germany 2. Schleudersalz (Trade name) 3. Micro BIOS FD 1357/49, Frames 1-4.

Abstract available as PB 100884s. 1p. Mi $1.25, Ph $1.25.

REINDARSTELLUNG UND IDENTIFIZIERUNG DER NIEDRIGMOLEKULAREN FETTSÄUREN AUS FRAKTIONERTEN VORLAUFFETTSÄUREN DER OXYDATION VON RIEBECK-PARAFFIN (PRODUCTION AND IDENTIFICATION OF PURE LOW-MOLECULAR FATTY ACIDS FROM FRACTIONATED FIRST RUN FATTY ACIDS OBTAINED IN THE OXIDATION OF RIEBECK PARAFFIN WAX), by Dr. Leutner. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Nov 1938. 42f drawings, graphs, tables (Text in German) Mi $2.50, Enl Pr $7.50. PB 100768

1. Fatty acids - Production - Germany 2. Paraffin wax - Oxidation - Germany 3. Micro BIOS FD 1471/49, Frames 1-41.

Report no. 1549. Abstract available as PB 100768s. 1p. Mi $1.25, Ph $1.25.

RESEARCH ON AROMATIZATION OF HYDROCARBONS. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1937-1944. 97f photos, graphs, tables (Text in German and English) Mi $4.25, Enl Pr $13.75. PB 100926

1. Kogasin (Trade name) 2. Hydrocarbons, Aromatic - Preparation - Germany 3. Hydrocarbons, Aromatic - Preparation - Patents - Germany 4. Nonane, Aromatic - Preparation - Germany 5. Micro BIOS FD 5465/47, Frames 1-86.

Abstract available as PB 100926s. 4p. Mi $1.25, Ph $1.25.

SUMMARY TABLES OF BIOLOGICAL TESTS, SPONSORED BY THE CHEMICAL-BIOLOGICAL COORDINATION CENTER. U. S. National Research Council. Chemical-Biological Coordination Center. Apr 1950. 71p tables Available free from National Research Council, Chemical-Biological Coordination Center, 2101 Constitution Ave., Washington 25, D. C. PB 100835

Volume 2, no. 2. For Volume 2, no. 1 see PB 100191

TABLES OF THE PHYSICAL CHARACTERISTICS OF A WIDE RANGE OF ESTERS. I. G. Farbenindustrie A. G., Schkopau, Ger. 1943. 64f tables (Text in German) Mi $3.00, Enl Pr $10.00. PB 110034

1. Alcohols, Polyhydric - Esters - Germany 2. Alcohols, Monohydric - Esters - Germany 3. Micro BIOS FD 1639/49, Frames 1-63.
Abstract available as PB 110034s. 2p. Mi $1.25, Ph $1.25.

UEBER DIE AUSSICHTEN DER GLYCERINERZEUGUNG DURCH VERGÄREN VON HOLZZUCKER. (PROSPECTS OF GLYCERINE PRODUCTION THRU FERMENTATION OF WOCD SUGAR), by Prof. Dr. K. Schoenemann, Dr. Ing. K. Rinn. U. S. Field Information Agency, Technical. Jun 1949. 35p drawings, diagrs, graphs, tables (part fold) Mimeo: $1.00. PB 97442
1. Glycerine - Production - Germany 2. Xylose - Fermentation - Germany 3. Darmstadt. Technische Hochschule. Institut für Chemische Technologie 4. FIAT FR 1255.

DETERIORATION STUDIES

SPECIFICITY OF MICROORGANISMS FOR MATERIALS, by Emma F. Little. U. S. Air Materiel Command. Engineering Division. Materials Laboratory, Wright Field, Dayton, Chio. Cct 1948. 2p. Mi $1.25, Ph $1.25. PB 98592s
1. AAF TSEAM M5285, Addendum 1.

ELECTRICAL MACHINERY, EQUIPMENT AND SUPPLIES

Communication Equipment

AUDIO CHARACTERISTICS OF COMMUNICATION EQUIPMENT. SUBMITTED BY THE STAFF OF THE ELECTRO-ACOUSTIC LABORATORY. Harvard University. Psycho-Acoustic Laboratory. Feb 1946. 307p photos, diagrs, tables Mi $9.00, Ph $38.75. PB 110243
Report of research under Contract N5ori-76, Project order II. Contents: Section F. Design of audio communication systems, by Leo L. Beranek, Feb 1946. Section G-I. Real-voice response of microphones, by A. L. DiMattia, J. P. Lienesch, R. A. Walker, S. Goldberg, and R. H. Nichols, Jr. Jan 1946. Section G-II. Pickup of ambient noise by microphones, by A. L. DiMattia, J. P. Lienesch, R. A. Walter, S. Goldberg, and R. H. Nichols, Jr. Section H. Response of certain earphones on the ear and on closed couplers, by F. M. Wiener and A. S. Filler. Dec 1945. Section J. Cushion attenuation as measured by physical techniques, by P. S. Veneklasen, A. S. Filler, J. A. Kessler and H. W. Rudmose. Jan 1946. Section K. Thermal noise generator for acoustical measurements, by P. S. Veneklasen. July 1945. Section M. Test methods and equipment for differential (noise-cancelling) lip microphones, by R. H. Nichols, Jr. and J. P. Lienesch, July 1945. PNR-6.

PERFORMANCE OF THE G.L. 446 LIGHTHOUSE TUBE AS AN R.F. AMPLIFIER IN THE 10-20 CM. REGION, by W. M. Breazeale and M. Waltz. Massachusetts Institute of Technology. Radiation Laboratory. Cct 1942. 8p drawing, graph, tables Mi $1.25, Ph $1.25. PB 100717
1. Amplifiers, Radio frequency (RF) 2. Tubes, Amplifier 3. G.L. 446 (Lighthouse tube) 4. MIT Rad Lab 291 5. MIT Rad Lab 61-9.
Portions of this report may not reproduce well.

PHYSICAL OPTICS OF METAL PLATE MEDIA, PART 2. EXPERIMENTAL STUDIES, by B. A. Lengyel, A. J. Simmons, J. J. Brady, M. D. Pearson and S. Peoples. U. S. Naval Research Laboratory, Washington, D. C. Jan 1950. 22p photos, graphs, tables Mi $2.00, Ph $3.75. PB 100798

An experimental study has been made of the transmitting and reflecting properties of metal-plate media with the plane of incidence perpendicular to the edges of the plates. The magnitude of the reflection coefficient was measured at normal incidence on the modified Michelson interferometer, the phase change in transmission on a free-space dielectrometer. At oblique incidence, transmitted and reflected intensities were measured on a microwave analogue of the spectrometer. The results provide an experimental confirmation of the theory of Carlson and Heins. NRL R 3599.

PRACTICAL LIMITS OF SPEEDED SPEECH, by William D. Garvey and Richard H. Henneman. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. May 1950. 24p graphs, tables Mi $2.00, Ph $3.75. PB 110071

A new technique was evolved based on chopping segments from a speech record on a plastic base recording tape, then splicing together the unremoved segments of the tape. The resulting abbreviated tape was found to provide an increased rate of speech without an attendant frequency increase or other indication of translation of the auditory pattern. Graphs and tables included. Bibliography attached. Contract W33-038 ac-21269. AAF TR 5917.

Electronics

CHANNEL GUIDE ANTENNA, by Walter Rotman. U. S. Air Force. Cambridge Research Laboratories, Cambridge, Mass. Jan 1950. 29p photos, diagrs, graphs, tables Mi $2.00, Ph $3.75. PB 100513

The electromagnetic characteristics and applications of channel guide antennas (i.e., rectangular waveguide with a continuous slot in a narrow wall) are presented. AAF CRL E5054.

DESIGN PROCEDURE FOR LUMPED-CONSTANT DELAY LINES. INTERIM REPORT ON BUSHIPS PROBLEM NO. D19.5, by Lawrence N. Higgins. U. S. Navy. Electronics Laboratory, San Diego, Calif. May 1948. 13p diagrs, graphs Mi $1.75, Ph $2.50. PB 100522

This report discusses factors concerned in the design of lumped-constant delay lines. A sample line illustrates the design procedure. Test data show that the sample line performs closely in accord with calculations and that the waveform distortion is tolerable. The peak-voltage attenuation to a 1/2-microsecond pulse for a delay of 4.7 microseconds is slightly in excess of 1 decibel, while the power-level attenuation to pulses greater in duration than 1/2 microsecond is 3.3 decibels.

DEVELOPMENT OF AN IMPROVED FLEXIBLE WAVEGUIDE. INTERIM ENGINEERING REPORT NO. V, JAN & FEB 1948, by Robert S. Carr. Airtron Inc., Pleasant Plains, N. Y. Mar 1948. 11p drawings, tables Mi $1.75, Ph $2.50. PB 100504

An investigation was undertaken to develop an improved flexible waveguide for 5/8" x 1 1/4" plumbing which may be twisted as much as 90° perfoot and bent to a 2 in. radius in the "E" plane and a 4 in. radius in the "H" plane while retaining

electrical characteristics comparable to existing flexible waveguides. During this period of investigations it was ascertained that the tubing design appears satisfactory in every way except as regards attenuation. The attenuation is unstable because of variations in the contact resistance between adjacent wraps. Report no. 6113-E. Portions of this report may not reproduce well.

ELECTRONIC MINIATURIZATION (NAER 00685), FINAL REPORT TO BUREAU OF AERONAUTICS, DEPARTMENT OF THE NAVY, DEPARTMENT OF NATIONAL DEFENSE. PREPARED BY THE STAFF OF THE ENGINEERING ELECTRONICS SECTION. U. S. National Bureau of Standards. Electronics Division. Engineering Electronics Section. Sep 1949. 189p photos, diagrs, graphs, drawings Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $4.75. PB 100949

1. Electronic equipment - Miniaturization.

IMPROVEMENTS IN REGENERATIVE FREQUENCY DIVIDERS, by G. K. Jensen and F. E. Wyman. U. S. Naval Research Laboratory. Dec 1949. 13p photo, diagrs, graphs Mi $1.75, Ph $2.50. Limited supply mimeo $.50. PB 100639

A description is given of novel regenerative frequency dividers in which the use of multiple-tuned circuits in the mixer or multiple-tuned circuits in conjunction with crystal rectifier distorters provide a number of advantageous operating characteristics with a minimum number of tubes. The particular circuits have a high division ratio, require no voltage-regulated power supplies, and exhibit self-starting and locking qualities heretofore not available with regenerative frequency divider techniques. NRL R 3580.

INPUT IMPEDANCE OF WIDE-ANGLE CONICAL ANTENNAS, by Charles H. Papas and Ronald King. Harvard University. Cruft Laboratory, Dec 1948. 30p drawing, graphs, tables Mi $2.00, Ph $3.75. PB 100508

A formula for the input impedances of spherically capped conical antennas was derived by considering the TEM-mode in the antenna region and a series of modes in the radiation region. A comprehensive table of auxiliary functions is included to facilitate the calculation of the input impedance for any large flare angle. Research was made possible through support extended jointly by the Office of Naval Research, the Signal Corps of the U. S. Army and the U. S. Air Force, under ONR contract N5-ori-76, Task Order no. I. HU CL TR 52.

LOW INERTIA RECORDER FOR DIRECTIVE ANTENNA PATTERNS, by O. A. Tyson. U. S. Naval Research Laboratory, Washington, D. C. Dec 1949. 21p photos, diagr, drawings Mi $2.00, Ph $3.75. PB 100797

A recorder has been developed according to a design which eliminates mechanical inertias. Received signal intensity is converted into time logarithmically and recording is accomplished by a spark from a uniformly translated paper. Point position then gives signal intensity logarithmically and paper position gives antenna orientation. The rectangular presentation provides eight inches for 40 decibels of antenna signal to a square law detector, and arbitrarily 10 inches for the angular range employed, say 180°. The rise time corresponds to 400 inches per second writing speed, but the writing speed actually realizable depends upon the marking rate of the recorder and the density of points required. NRL R 3588.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND FROM 25 TO 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD JUL 18, 1946-SEP 8, 1946, by Harold H. Nielsen and Robert A. Oetjen. Ohio State University Research Foundation, Columbus, Ohio. Sep 1946. 20f table Mi $1.75, Enl Pr $3.75. PB 100664
1. Infrared - Research 2. Infrared detection 3. Spectrographs, Infrared.
Contract W 33-038-ac-17407, Project 275, Report 1. See also PB 100662-100663, 100665-100679, 100686s-s2.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND FROM 25 TO 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD SEP 8, 1946 TO OCT 7, 1946, by Harold H. Nielsen and Robert A. Oetjen. Ohio State University Research Foundation, Columbus, Ohio. Oct 1946. 7f Mi $1.25, Enl Pr $2.50. PB 100665
1. Infrared - Research 2. Infrared detection 3. Spectrographs, Infrared
Contract W-33-038-ac-15407, Project 275, Report 2. See also PB 100662-100664, 100666-100679, 100686s-s2.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND FROM 25 TO 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD OCT 8, 1946 TO NOV 7, 1946, by Harold H. Nielsen and Robert A. Oetjen. Ohio State University Research Foundation, Columbus, Ohio. Nov 1947. 5f Mi $1.25, Enl Pr $2.50. PB 100666
1. Infrared - Research 2. Infrared detection 3. Spectrographs, Infrared.
Contract W-33-038-ac-15407, Project 275, Report 3. See also PB 100662-100665, 100667-100679, 100686s-s2.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND FROM 25 TO 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD NOV 6 TO DEC 7, 1946, by Harold H. Nielsen and Robert A. Oetjen. Chio State University Research Foundation, Columbus, Ohio. Jan 1947. 6f Mi $1.25, Enl Pr $2.50. PB 100667
1. Infrared - Research 2. Infrared detection 3. Spectrographs, Infrared.
Contract W-33-038-ac-15407, Project 275, Report 4. See also PB 100662-100666, 100668-100679, 100686s-s2.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND FROM 25 TO 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD JUL 7 TO SEP 7, 1947, by Harold H. Nielsen and Robert A. Oetjen. Ohio State University Research Foundation. Columbus, Ohio. Sep 1947. 6f Mi $1.25, Enl Pr $2.50. PB 100672
1. Infrared - Research 2. Infrared detection 3. Spectrographs, Infrared.
Contract W-33-038-ac-15407, Project 275, Report 9. See also PB 100662-100671, 100673-100679, 100686s-s2.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND FROM 25 TO 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD SEP 8 TO NOV 7, 1947, by Harold H. Nielsen and Robert A. Oetjen. Ohio State University Research Foundation, Columbus, Chio. Dec 1947. 7f Mi $1.25, Enl Pr $2.50. PB 100673
1. Infrared - Research 2. Infrared detection 3. Spectrographs, Infrared.
Contract W-33-038-ac-15407, Project 275, Report 10. See also PB 100662-100672, 100674-100679, 100686s-s2.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND FROM 25 TO 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD NOV 8, 1947 TO JAN 8, 1948, by Harold H. Nielsen and Robert A. Cetjen. Ohio State University Research Foundation, Columbus, Ohio. Jan 1948. 8f Mi $1.25, Enl Pr $2.50. PB 100674

1. Infrared - Research 2. Infrared detection 3. Spectrographs, Infrared.

Contract W-33-038-ac-15407, Project 275, Report 11. See also PB 100662-100673, 100675-100679, 100686s-s2.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND OF 25 TO 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD JAN 8 TO MAR 7, 1948, by Harold H. Nielsen and Robert A. Oetjen. Ohio State University Research Foundation, Columbus, Ohio. Apr 1948. 9f Mi $1.25, Enl Pr $2.50. PB 100675

1. Infrared - Research 2. Infrared detection 3. Spectrographs.

Contract W-33-038-ac-15407, Project 275 Report 12. See also PB 100662-100674, 100676-100679, 100686s-s2.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND FROM 25 TC 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD NOV 8, 1948 TO JAN 7, 1949, by Harold H. Nielsen and Robert A. Oetjen. Ohio State University Research Foundation, Columbus, Ohio. Feb 1949. 7p Mi $1.25, Ph $1.25. PB 100662

1. Infrared - Research 2. Infrared detection 3. Spectrographs, Infrared.

Contract W-33-038-ac-15407, Project 275, Report 17. See also PB 100663-100679, 100686s1-s2.

METHODS AND TECHNIQUES LEADING TO THE DEVELOPMENT OF MEASURING DEVICES IN THE INFRARED SPECTRAL BAND OF 25 TO 400 MICRONS. INTERIM ENGINEERING REPORT FOR PERIOD MAR 8 TO MAY 7, 1949, by Harold H. Nielsen and Robert A. Oetjen. Chio State University Research Foundation, Columbus, Ohio. Jun 1949. 7f Mi $1.25, Enl Pr $2.50. PB 100679

1. Infrared - Research 2. Infrared detection 3. Spectrographs, Infrared.

Contract W-33-038-ac-15407, Project 275, Report 19. See also PB 100662-100679, 100686s-s2.

MICROSCOPICAL EXAMINATION OF PRIMER COMPOSITIONS, by Alfred T. Blomquist. U. S. Office of Scientific Research and Development. Aug 1944. 68p photos, tables Mi $3.00, Ph $8.75. PB 100613

1. Primers, Percussion - Examination 2. Explosives - Crystallography 3. Booster - Composition 4. OSRD 3757.

Service Project OD-109. Progress report under Contract no. OEMsr-193 with Cornell University.

NETWORK ANALOGUES FOR THE SOLUTION OF RADIATION PROBLEMS, by Carl A. Wiley. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Mar 1947. 20p diagrs, tables Mi $1.75, Ph $2.50. PB 100506

The construction of network analogues for the solution of radiation problems are investigated. It was found that there exists an analogue, which is both relatively inexpensive and convenient, in which networks simulate free space. Since free space has inductance and capacity uniformly distributed from point to point, it can be

"modelled" by a network of coils and condensers connected in a lattice form of two or three dimensions with the lattices representing unit areas or volumes. Boundary surfaces having the desired shapes may be set up, these comprising metal for short circuits or a change of network constants for a change of medium. AAF TR 5711.

NEW DESIGN OF METAL TO CERAMIC SEALS COMPARED WITH FORMER DESIGNS, by Walter Knecht. U. S. Air Materiel Command. Engineering Division. Electronic Subdivision Advisory Group, Wright Field, Dayton, Ohio. Dec 1949. 24p photos, diagr, graph, tables Mi $2.00, Ph $3.75. PB 100731

The powder technique of bonding metal to ceramic produces intimate contract between metal and ceramic, which promotes chemical reactions between metal and ceramic. This technique leads to a new design of metal to ceramic seal without the necessity of brazing. AAF TR 6101.

ON THE THEORY OF ELECTRIC BREAKDOWN IN IONIC CRYSTALS, by Herbert Callen. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Oct 1948. 56p graphs, tables Mi $2.75, Ph $7.50. PB 100510

The electric breakdown strength of ionic crystals at low and moderate temperatures is calculated by employing von Hippel's low energy breakdown criterion and Frohlich's method of treatment of the interaction between electrons and lattice. The calculation accounts in a natural way for the lack of dependence of breakdown strength on crystallographic orientation, and for the strong directional dependence of the breakdown paths. Relatively good quantitative agreement with experimental data is obtained. MIT LIR TR 13.

THE OUTPUT CURRENT OF A NONLINEAR DEVICE, by Bernard Salzberg. U. S. Naval Research Laboratory. Jan 1950. 19p graphs Mi $1.75, Ph $2.50. PB 100923

A voltage consisting of a cosine term superposed on a steady term is applied to the input of a nonlinear device. The output current of the device is zero for negative voltages, and proportional to the nth power of the voltage when it is positive, the exponent n being 1, 3/2, or 2. In general, the current may be represented by a Fourier series, the coefficients of the various terms of which are functions of n and the magnitudes of the two components of the voltage. Graphs of coefficients of the leading Fourier terms, and of the root-mean-square current, are presented for both continuous and discontinuous current, for n=1, 3/2, and 2. NRL R 3622.

DAS PHOTOGRAPHISCHE OBJEKTIV. (PHOTOGRAPHIC LENSES) PARTS 1 AND 2, by W. Merte, R. Richter and M. von Rohr. 1932. 532p photos, diagrs, graphs, tables Mi $9.00, Ph $67.50. PB 100660

1. Lenses, Photographic - Germany 2. Lenses, Optical - Germany 3. Lenses - Manufacture - Germany 4. Lenses, Stereoscopic - Germany 5. AAF T-2 T/5052. Translated from the German Apr 1949.

RADAR IN NARROW WATERS. National Research Council of Canada. 1950. 48p photos, diagrs, maps. Mi $2.50, Ph $6.25. Also available from the National Research Council of Canada, Ottawa, Canada. PB 100799

1. Radar, Overwater transmission - Measurements - Canada.

REICHSMARSCHALLBERICHT. (REPORT ON THE GROWTH OF ARTIFICIAL PIEZOELECTRIC CRYSTALS), by Herr Kunze. Germany. Bevollmächtigte für Hochfrequenzforschung. Jan 1945. 3p Mi $1.25, Ph $1.25. PB 100996

The growth of piezoelectric crystals by artificial means was investigated. The cultivation of synthetic quartz crystals of suitable size has been successful. It was possible to cultivate a monocrystallic quartz crystal having the form of a rectangular plate with dimensions of 20 x 20 x 3 mm from a watery solution. Electrical tests with an oscillator having a frequency of 4281.8 kilocycles per second produced from a cultivated crystal proved that the synthetic crystals is qualitatively absolutely equal to the natural ones. AAF T-2 T/5700.

ROTATED ELASTIC AND PIEZOELECTRIC COEFFICIENTS OF AMMONIUM DIHYDROGEN PHOSPHATE, by Bruce J. Faraday. U. S. Naval Research Laboratory, Washington, D. C. Dec 1949. 54p diagrs, graphs, tables Mi $2.75, Ph $7.50. PB 110131

By applying transformation equations to Mason's experimental results, the elastic and piezoelectric coefficients of ammonium dihydrogen phosphate (ADP) are computed for separate rotations about the crystallographic axes. Young's modulus for the long bar is similarly treated. Expressions are derived for the Mason D' piezoelectric coefficient and for k, the electromechanical coupling, of the Z-cut long bar. NRL R 3589.

STUDY OF DIRECTIONAL COUPLERS WITH EMPHASIS ON FREQUENCY CHARACTERISTICS, by Morton S. Tanenbaum. Polytechnic Institute of Brooklyn. Microwave Research Institute, Brooklyn, N. Y. Jan 1949. 23p diagrs, drawings, tables Mi $2.00, Ph $3.75. PB 100505

A study of directional couplers was made with emphasis on frequency characteristics. The study was undertaken in conjunction with a more general survey of components used in impedance measuring devices at microwave radio frequencies. Various types of directional couplers were evaluated, especially with regard to their frequency characteristics to determine their applicability to broad band impedance measuring devices. The couplers are analyzed with respect to principle of operation, directivity, coupling, and the frequency characteristics of the directivity and coupling. Report R-187-49, PIB 131. Contract no. W33-038-ac-18115. PIB 131.

TECHNICAL PAPER SERIES: NO 42. SPECIAL RELATIVITY AND THE ELECTRON, BY WILLIS W. HARMAN; NO. 43. STABILIZED VOLTAGE-DROPPING ELEMENT, BY SYDNEY E. SMITH; NO. 44. IMPEDANCE OF RESONANT TRANSMISSION LINES AND WAVE GUIDES, BY WILLIS W. HARMAN. LEAFLET SERIES: NO. 13. WEATHER AND ELECTRONICS RESEARCH, by E. Donald Kennedy. Florida. University. College of Engineering. Engineering and Industrial Experiment Station, Gainesville, Fla. 1949-1950. 18p diagrs, graphs, tables Available from Florida Engineering and Industrial Experiment Station, College of Engineering, University of Florida, Gainesville, Fla. PB 100911

Engineering progress at the University of Florida, Vol. IV, no. 4, supp. Apr 1950. Technical paper series are reprints as follows: no. 42. Special relativity of the electron, by Willis W. Harman, reprinted from Proceedings of the Institute of radio engineers, Vol. 37, no. 11, Nov 1949, p. 1308-1314; no. 43. Stabilized voltage-dropping element, by Sydney E. Smith, reprinted from Radio-electronic engineering, edition of Radio and television news, Nov 1949. no. 44. Impedance of resonant transmission lines and wave guides, by Willis W. Harman, reprinted from Journal of Applied Physics, Vol. 20, no. 12, Dec 1949, p. 1252-1255. Leaflet series no. 13. Weather and electronics research, by E. Donald Kennedy, reprinted from Journal of Southern Research, Jan 1950.

TEMPERATURE-LIMITED DIODE, by Julian K. Knipp. Massachusetts Institute of Technology. Radiation Laboratory. Jan 1946. 24p Mi $2.00, Ph $3.75. PB 100381
1. Tubes, Electronic 2. Vacuum tubes, Diode 3. MIT Rad Lab 761.
NDRC Div. 14. OEMsr-262.

THEORETICAL LIMITATIONS ON THE RATE OF TRANSMISSION OF INFORMATION, by William G. Tuller. Massachusetts Institute of Technology. Research Laboratory of Electronics. Apr 1949. 24p diagrs, graphs Mi $2.00, Ph $3.75. PB 100995
A study is presented which was made to determine the theoretical limitations on the rate of transmission of information. It includes the effects of noise. The theory, shows that information may be transmitted over a circuit when the relation of the quantity of information is less than the transmission link bandwidth multiplied by the time of transmission, times the log of the quantity, one plus the carrier to noise ratio (1+C/N). Special cases were considered and the theory was applied to such communication systems as voice, radar relays, telemeters, servomechanisms and computers. Research reported in this document was made possible through support extended the Massachusetts Institute of Technology, Research Laboratory of Electronics jointly by the Army Signal Corps, the Navy Department (Office of Naval Research) and the Air Force (Air Materiel Command). MIT RLE TR 114.

Miscellaneous

BATTERY INDUSTRY IN JAPAN, by K. G. Parameswaran. Cct 1949. 124p fold. drawings, fold diagrs, fold. graphs Mi $5.00, Ph $16.25. PB 100523
A report on salient features of battery techniques in Japan. The batteries, methods of fabrication and preventive measures against lead poisoning are described.

BERECHNUNG VON STAHLMAGNETEN (CALCULATION OF STEEL MAGNETS), by W. Fischer. Jun 1938. 10f drawings Mi $1.25, Enl Pr $2.50. PB 100936
1. Magnets, Permanent - Germany 2. Micro GDC 10/7682 translation 3. Micro RTP 7682 4. Micro BIOS FD 1281/48, Frames 1-9.
Abstract available as PB 100936s. 1p. Mi $1.25, Ph $1.25.

BLEISULFID-ZELLE (LEAD SULPHIDE CELL) TRANSLATED by H. E. Pinkerton & Co. Electroacoustic G.m.b.H., Kiel, Ger. n.d. 4p diagrs, graphs Mi $1.25, Ph $1.25. PB 100906
The following are discussed in detail regarding a German lead sulphide cell: the contacts; the preparation of the PbS layer; after treatment of the layer; degassing and gettering; resistance of the layer; spectral distribution, and sensitivity of the cell. AAF T-2 T/5073.

CURRENT AND TEMPERATURE RISE IN AIRCRAFT CABLES. PART I. SINGLE CABLES UNDER STEADY-STATE CONDITIONS, by M. Schach. U. S. Naval Research Laboratory, Washington, D. C. 1949. 30p diagrs, graphs, tables Mi $2.00, Ph $3.75. PB 100855
As a step toward solving the bundle-rating problem, an analysis of relations between current and temperature rise for the case of the single cable in air is presented. Two methods for determining the continuous current necessary to produce a given rise in conductor temperature are discussed. The study provides methods for computing the current capacity of single cables, at sea level and at various altitudes, which are of general validity and will serve as a basis for an analysis of the grouped-cable problem. NRL R 3587.

HANDBOOK OF RESIDENTIAL WIRING DESIGN: SINGLE FAMILY DWELLINGS. Industry Committee on Interior Wiring Design, New York, N. Y. 1946. 28p diagrs, tables Available from Illuminating Engineering Society, 51 Madison Avenue, New York 10, N. Y. $.25. PB 110144

This booklet explains in detail how to plan wiring. Its purpose is to supply a set of standards, ampliance with which will result in an efficient, convenient and useful home wiring system, and one which will help avoid electrical obsolescence. AIA File no. 31-C-61.

HIGH PRESSURE ACTYLENE GENERATORS. PRESSURE LAMPS FOR LIQUID FUEL. Continental Licht- und Apparatebau, Frankfurt am Main, Ger. n.d. 27p photos, drawings (Text in German and English) Mi $2.00, Ph $5.00. PB 100830

1. Generators, Acetylene - Catalogs - Germany 2. Lamps, Pressure - Germany 3. Micro BIOS FD 3692/47, Frames 1-22.

English abstract included.

RADIO FREQUENCY HEATING, by J. A. Hopps. National Research Council of Canada. Radio and Electrical Engineering Division. Laboratories. Jun 1949. 20p photos, drawings, tables Mi $1.75, Ph $2.50. Also available from the National Research Council of Canada, Ottawa $.15. PB 99873

A general discussion of basic principles and scope of application of radio frequency heating. Fundamental equations are given for determination of operating parameters. Radio frequency generators of 400-watt and 1200-watt capacity are described. NRCC ERB 229.

FOOD AND KINDRED PRODUCTS

CITRUS MOLASSES, by R. B. Becker, P. T. Dix Arnold, George K. Davis and E. L. Fouts. Florida. Agricultural Experiment Station, Gainesville, Fla. Apr 1946. 3p Available from University of Florida. Agricultural Experiment Station, Gainesville, Fla. PB 110087

Recovery, estimated feeding value, palatability, and effect on milk flavor, of citrus molasses, and its use in silage. Press Bulletin 623, Apr 1936.

STUDIES ON THE PHYSIOLOGY OF VOLUNTARY FOOD INTAKE, by Franklin Hollander, Herbert A. Sober, and Joseph Bandes, July 1, 1946 to September 1, 1948. Sep 1948. 36p tables Mi $2.25, Ph $5.00. PB 100104

The investigation was conducted on an ambulatory human subject (identified as Freddie), 18 years old at the start, and is divided as follows: Phase I. Clinical history of the subject: attempts at nutritional and surgical rehabilitation prior to the start of this investigation. Phase II. Imitiation of controlled observation: development of a procedure for routine management of the subject, and determination of his clinical status. Phase III. The effect of oral ingestion of variations in jejunal intake of calories and whole liver substances. Phase IV. Changes in body weight with variations in metritional intake. Phase V. Miscellaneous observations: (1) water intake and urinary output; (2) stool; (3) metabolic studies; (4) sensations of warmth. Phase VI. Some notes regarding Freddie's history after the end of the investigation. Tables appear throughout. Bibliography and table of contents are attached.

EINFLUSS VON ZUSÄTZEN AUF DIE KÄLTE- UND WASSERBESTÄNDIGKEIT SOWIE AUF DEN DAMPFDRUCK VON KRAFTSTOFFEN (EFFECT OF ADDITIVES ON THE RESISTANCE OF FUELS TO LOW TEMPERATURE AND WATER, AND ON THEIR VAPOR PRESSURE), by Richard Heinze and others. 1941. 25f graphs, tables (Text in German) Mi $2.00, Enl Pr $5.00. PB 100955
1. Fuel additives - Germany 2. Fuels - Vaporization - Germany 3. Micro BIOS FD 2877/46, Item 29, Frames 66-88.

EMPLEO DE GRAFITO COLOIDAL Y ADITIVOS EN LOS ACEITES LUBRICANTES (USE OF COLLOIDAL GRAPHITE AND ADDED MATERIALS IN LUBRICANTS), by Alfredo F. Sainz. Apr 1950. 79p table Mi $3.50, Ph $10.00. PB 100801
The following subject material is considered: lubricants with added graphite, used in graphite-lubricants and greases and in motor oils of the heavy-duty type, anti-oxidation lubricants, detergents plus anti-oxidation substances, rust-preventives, lubricating agents compounded for extreme pressure conditions, agents to reduce the freezing point and to improve viscosity ratings. A tabulation of U. S. Patents of additive substances for lubricants and a bibliography is attached. Translation from Informaciones Petroleras, Mar-Apr 1949, p. 41-60. STS 86.

FRICTION OF SURFACE FILMS FORMED BY DECOMPOSITION OF COMMON LUBRICANTS OF SEVERAL TYPES, by Robert L. Johnson, Douglas Godfrey, and Edmond E. Bisson. U. S. National Advisory Committee for Aeronautics. Apr 1950. 26p photos, graphs, table Mi $2.00, Ph $3.75. PB 100776
An investigation was conducted to determine the effect on friction of films formed by decomposition of several common petroleum and synthetic lubricants on steel. Films were deposited by heating, in air, surfaces on which a thin film of fluid lubricant had been applied. Experiments were run with an apparatus employing an elastically restrained spherical rider sliding in a spiral path on a rotating disk. NACA TN 2076.

GAS (2) FOR NAVY HE-GAS PROJECTILES. PREPARATION OF CACODYL BY ELECTROLYTIC REDUCTION OF CADET'S LIQUID, by Benjamin Witten. Jun 1942. 25p drawings, tables Mi $2.00, Ph $3.75. PB 100806
1. Cacodyl 2. Cadet's liquid (Trade name) 3. EATD MR 383.

GAS (2) FOR NAVY HE-GAS PROJECTILE. PREPARATION OF CACODYL IN EXPERIMENTAL PLANT (OUTPUT TWO KG. PER 8-HR. DAY), by L. Finkelstein and others. May 1942. 34p photos, tables Mi $2.25, Ph $5.00. PB 100805
1. Cacodyl 2. EATD MR 379.

INVESTIGATION AND TESTS ON CUNO OIL FILTER, by Takenobu Nagahiro. Oct 1940. 53p photos (Text in Japanese and English) Mi $2.75, Ph $7.50. PB 100307
Tests were conducted to investigate the service conditions of the Cuno-type oil filter as used by the Japanese Air Force on Kinsei, Kotobuki, and Hikari engines, and to test modifications of repair methods for possible improvement of engine durability. A method for repairing uneven discs was tested, and the possibility of making them more level is ascertained. AAF T-2 T/5889.

MANUAL, CHAPTER 45: LUBRICANTS AND LUBRICATION SYSTEMS. U. S. Bureau of Ships. Apr 1947. 23p diagrs, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.25. PB 110093
1. Lubricants 2. Lubrication 3. NAVSHIPS 250-000-45.

NEW COMPOUNDS: PREPARATION OF CACODYL, by Benjamin Witten. Nov 1941. 35p drawing, tables Mi $2.25, Ph $5.00. PB 100804
1. Cacodyl 2. EATD MR 316.

PHYSICAL CHARACTERISTICS FUELS PROCURED BY THE UNITED STATES AIR FORCE DURING THE FISCAL YEAR 1949, by Rex M. Gray. U. S. Air Materiel Command. Engineering Division. Power Plant Laboratory, Wright Field, Dayton, Ohio. Nov 1949. 5p Mi $1.25, Ph $1.25. PB 100509
1. Fuels, Aviation - Tests 2. Gasoline - Tests 3. JP-1 (Aviation fuel) 4. JP-3 (Aviation fuel) 5. AAF TSEPP 531-507.
This report supersedes and cancels AAF TSEPP 531-505.

PHYSICAL CHARACTERISTICS OF AIRCRAFT FUELS DURING CALENDAR YEAR 1947, by Richard M. McLaughlin. U. S. Air Materiel Command. Engineering Division. Power Plant Laboratory, Wright Field, Dayton, Ohio. Jun 1948. 4p tables Mi $1.25, Ph $1.25. PB 100507
The physical characteristics of AN-F 23, 26, 28, 33, 32 (JP-1), 58 (JP-3), and 48 aircraft fuels have been determined. Methods of obtaining the weighted average density and the arithmetical average density of the fuels are outlined. The average aromatic content, average olefin content, and average viscosity were calculated by a method similar to that employed in determining the weighted average density. The results of this study are shown in an attached table. AAF TSEPP 531-482.

PRELIMINARY CLASSIFIED INDEX OF TECHNICAL OIL MISSION REELS 1-259 AND 273-279, V. 3, COMPILED by W. M. Sternberg. U. S. Bureau of Mines. Dec 1949. 97p Mi $4.25, Ph $12.50. PB 100382
1. Fuels, Synthetic - Bibliography - Germany 2. Micro TOM 1-259 indexes 3. Micro TOM 273-279 indexes.
For v. 1-2 see PB 99975-76; for v. 4 see PB 100383.

PRELIMINARY CLASSIFIED INDEX OF TECHNICAL OIL MISSION REELS 1-259 AND 273-279, v. 4, COMPILED by W. M. Sternberg. U. S. Bureau of Mines. Dec 1949. 275p Mi $9.00, Ph $35.00. PB 100383
1. Fuels, Synthetic - Bibliography - Germany 2. Micro TOM 1-259 indexes 3. Micro TOM 273-279 indexes.
For v. 1-2 see PB 99975-76; for v. 3 see PB 100382.

SYNTHESIS OF METHANE. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1938-1944. 75f drawings only (Legends in German) Mi $3.50, Enl Pr $11.25. PB 100818
1. Methane - Synthesis - Germany 2. Perma gas (Trade name) 3. Valves - Design - Germany 4. Micro BIOS FD 5468/47, Frames 1-15.
Abstract available as PB 100818s. 2p. Mi $1.25, Ph $1.25.

ÜBER DIE AUSWASCHUNG VON PHENOLEN AUS PHENOLHALTIGEN TEERÖLEN MITTELS WÄSERIGEM METHANOL (EXTRACTION OF PHENOLS FROM LOW

TEMPERATURE TAR AND SHALE OILS), by Dr. von Fragstein. I. G. Farbenindustrie A. G., Leverkusen, Ger. Mar 1942-Apr 1943. 37f drawings, tables (Text in German) Mi $2.25, Enl Pr $6.25. PB 100930

1. Phenol - Extraction - Germany 2. Tar oil - Phenol separation - Germany 3. Shale oil - Phenol separation - Germany 4. Micro BIOS FD 770/48, Frames 9413-9450.

Abstract available as PB 100930s. 2p. Mi $1.25, Ph $1.25.

UTILIZATION OF ALUMINIUM CHLORIDE SLUDGE FROM MINERAL OIL SYNTHESIS. Norddeutsche Mineraloelwerke Stettin G.m.b.H., Stettin, Ger. 1940-1944. 21f (Text in German) Mi $2.00, Enl Pr $5.00. PB 100820

1. Aluminum chloride - Recovery - Germany 2. Mineral oils - Synthesis - Germany 3. Sludge - Filtration - Germany 4. Micro BIOS FD 2874/46, Item 72-75, Frames 1-21.

Abstract available as PB 100820s. 2p. Mi $1.25, Ph $1.25.

UTILIZATION OF LUBE OIL AND OTHER RESIDUES FOR THE PRODUCTION OF FACTICE, SUBSTITUTES FOR LINSEED OIL, ETC. I. G. Farbenindustrie A. G., Schkopau, Ger. 1942-1943. 18f table (Text in German) Mi $1.75, Enl Pr $3.75. PB 110028

1. Factices - Manufacture - Germany 2. Linseed oil - Substitutes in Buna fabrication - Germany 3. Micro BIOS FD 2160/47, Frames 1-17.

INSTRUMENTS

ELEKTRISCHER HÖHENMESSER FU G 101. (RADIO ALTIMETER FUG 101). Luftfahrtgerätewerk Hankenfelde G.m.b.H., Berlin. Nov 1942. 21p photos, diagrs Mi $2.00, Ph $3.75. PB 110122

1. Altimeters, Radio - Germany 2. FuG 101 (Altimeter).

Photos will not reproduce well. Kurzbeschreibung und betriebsvorschrift E 93001.

ENTWICKLUNG DER KRISTALLGLEICHRICHTER (DETEKTOREN) FÜR ZENTIMETERWELLEN (DEVELOPMENT OF CRYSTAL RECTIFIERS (DETECTORS) FOR CENTIMETER WAVES), by Wolfgang Buell. Drahtlostelegraphische und Luftelektrische Versuchsstation, Gräfelfing, Ger. Jul 1943. 16p diagr, graphs, tables Mi $1.75, Ph $2.50. PB 100909

The development of crystal rectifiers for centimeter waves is outlined. A detector is described which has so far been considered as the most adequate one. Most of the illustrations are omitted. AAF T-2 T/5111.

FORSCHUNGSARBEITEN AUF DEM DETEKTOR-GEBIET (DETECTOR RESEARCH). Drahtlostellegraphische und Luftelektrische Versuchsstation, Gräfelfing, Ger. Oct 1944. 4p Mi $1.25, Ph $1.25. PB 100908

Investigations and comparisons are made of various types of detectors in the centimeter region. Evaporation and deposition of germanium in high vacuum, the production of synthetic pyrite, and the development of an apparatus capable of plotting the characteristic curve of the detector on the Braun tube are also discussed. AAF T-2 T/5218.

GAGING - ACCURACY - GAGE CONSCIOUSNESS. U. S. Bureau of Ships. Oct 1946. 6p photos, diagrs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 99729
1. Instruments - Tests 2. Tools - Tests 3. NAVSHIPS 250-009 4. NAVSHIPS IN 57.
Includes Naval industrial reading digest, supplement to Industrial note on "Gaging".

GERAET ZUR BESTIMMUNG VON DETEKTOR-WIEDERSTANDSKENNLINIEN (DEVICE FOR THE DETERMINATION OF THE RESISTANCE CHARACTERISTICS OF DETECTORS), by Kirchmayer and W. Hudecek. Flugfunk-Forschungsinstitut Oberpfaffenhofen E.V., Oberpfaffenhofen, Ger. May 1944. 8p diagrs, graph Mi $1.25, Ph $1.25. PB 100907
A device which permits control of the cut-off resistance and the rectification effect during the peak operation was designed in order to permit recording detector characteristics in the laboratory and to test the detector electrically during the manufacturing process. In order to measure the resistance at the given operating points, a constant HF current of 0.1 micro amps is sent through the detector. The voltage at the detector then is a measure of the inclination of the characteristic. It is amplified, rectified, and indicated on an instrument. AAF T-2 T/4948.

HIGH FREQUENCY CHARACTERISTICS OF RESISTORS, by D. T. Drake. Massachusetts Institute of Technology. Radiation Laboratory. Mar 1944. 23p diagrs, graphs Mi $2.00, Ph $3.75. PB 110290
1. Resistors - High frequency characteristics 2. MIT Rad Lab 520.

AN INTERFEROMETER FOR MICROWAVE, by B. A. Lengyel and A. J. Simmons. U. S. Naval Research Laboratory, Bellevue, D. C. Nov 1949. 19p photos, drawings, graphs, diagrs Mi $1.75, Ph $2.50. PB 100525
Description of a microwave interferometer constructed on the principle of Michelson's optical instrument. The interference is produced between a reference signal led through a waveguide and a signal reflected from a movable reflector and a fixed half-reflecting mirror. Design considerations pertaining to X-band and K-band instruments are described and an evaluation made of the instruments constructed. Important uses of the instrument include wavelength determination, the measurement of dielectric constants of materials available in sheet form, the determination of reflection from laminated sheets, metal-plate media and metal loaded dielectrics at normal incidence. NRL R 3562.

INTERPRETATION OF AZIMUTH INDICATORS BY NOVICES. II. AIRCRAFT INDICATORS WITH FULL-SCALE AZIMUTH CARDS THAT TURN, by Roger Brown Loucks. U. S. Air Materiel Command. Wright Field, Dayton, Ohio. Oct 1949. 16p photos, tables Mi $1.75, Ph $2.50. PB 100733
1. Azimuth instruments 2. Indicators, Azimuth 3. Washington. University. Dept. of Psychology 4. AAF TR 5965.
Cover date is Mar 1950. USAF Contract no. W33-038 ac-15230.

MANUAL,CHAPTER 87: MECHANICAL MEASURING INSTRUMENTS. U. S. Bureau of Ships. Jul 1947. 20p photos, drawings Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 110088
1. Instruments, Measuring - Mechanical 2. NAVSHIPS 250-000-87.

REVIEW OF LITERATURE PERTINENT TO FIRE-EXTINGUISHING AGENTS AND TO BASIC MECHANISMS INVOLVED IN THEIR ACTION, by George Fryburg. U. S. National Advisory Committee for Aeronautics. May 1950. 61p graphs, tables Mi $3.00, Ph $8.75. PB 110270

An analysis was made of existing data with respect to relative fire-extinguishing effectiveness of different substances and the basic mechanisms involved in the action of extinguishing agents. Five basic actions of fire-extinguishing agents are enumerated and discussed. Recommendations for research are made on the basis of the analysis. NACA TN 2102.

SOME FURTHER ADVANCE-CURRENT ANEMOMETER RECORDINGS OF THE PROCESSES IN TURBULENT FLOW, by Wilhelm Fuchs. Mar 1944. 14p graphs Mi $1.75, Ph $2.50. PB 96084

1. Flow - Turbulent - Germany 2. Anemometers - Germany 3. Aachen. Mathematische und Physiche Institut 4. Micro GDC 10/5207T, translation.

Parts of this report may not reproduce well.

THERMISTORS AS TOOLS IN RESEARCH AND DEVELOPMENT, by Erwin K. Weise, Willibald Jentschke and True W. Robinson. U. S. Air Material Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Sep 1949. 32p graphs Mi $2.25, Ph $5.00. PB 100655

This report introduces the reader to the physical properties, theoretical considerations, applications and current international production possibilities of the thermistor type of semiconductors. The report is confined to thermistors and does not include photoconductors, rectifiers and thermocouples. AAF TR 5824.

UPPER ATMOSPHERE RESEARCH. REPORT NO. IX. SUN-FOLLOWER FOR THE V-2 ROCKETS, by Harry L. Clark. U. S. Naval Research Laboratory, Washington, D. C. Aug 1949. 70p photos, diagrs, drawings, graphs Mi $3.00, Ph $8.75. PB 100729

To overcome the deleterious effects of the V-2 rocket's angular motion, a two-axis tracker, known as the Sun-Follower, was developed for stabilizing a spectrograph and keeping it pointed at the sun regardless of the spin and precession of the rocket. Automatic detachment of the Sun-Follower and spectrograph from the rocket and descent by parachute was provided to facilitate recovery. The Sun-Follower's design and performance are described. NRL R 3522.

VERFAHREN ZUR HERSTELLUNG VON LEHREN MIT EINER BESTÜCKUNG DÜNNER HARTMETALLSCHICHTEN (METHODS FOR MAKING GAUGES FROM THIN HARD METAL SECTIONS), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Apr 1942. 2f (Text in German) Mi $1.25, Enl Pr $1.50. PB 100944

1. Gages - Manufacture - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11367 4. Micro BIOS FD 912/47, Frame 1.

Listed in BIOS FR 925 appx. I, p. 35. Abstract available as PB 100944s. 1p. Mi $1.25, Ph $1.25.

MACHINERY

ANALYTICAL METHOD OF ESTIMATING TURBINE PERFORMANCE, by Fred D. Kochendorfer and J. Cary Nettles. U. S. National Advisory Committee for Aeronautics. 1949. 16p diagrs, graphs, tables Available from Supt. of Documents, U.S. Government Printing Office, Washington 25, D. C. $.15. PB 110048
1. Turbines, Gas - Performance 2. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio 3. NACA 930.

AUTOMATIC COIL WINDING MACHINE. Siemens & Halske A. G., Berlin. 1946. 55f drawings only (Legends in German) Mi $2.75, Enl Pr $8.75. PB 100956
1. Winding equipment - Germany 2. Micro BIOS DOCS 2368/1388 3. Micro BIOS FD 2372/48, Frames 1-31.
Abstract available as PB 100956s. 1p. Mi $1.25, Ph $1.25.

AUTOMATIC GRINDING AND POLISHING MACHINES. Voigtlaender A. G., Braunschwig, Ger. 1943. 275f drawings only (Legends in German) Mi $9.00, Enl Pr $37.50. PB 110057
1. Machines, Grinding - Design - Germany 2. Machines, Polishing - Design - Germany 3. Micro BIOS FD 850/46, Frames unnumbered.
Abstract available as PB 110057s. 1p. Mi $1.25, Ph $1.25. Five of drawings listed are omitted.

BESPRUCHUNG IN MAGDEBURG AM 4.7.44 ÜBER DAS AUTOMATISCHE SCHLEIFEN VON HARTMETALLWERKZEUGEN (DISCUSSION IN MAGDEBURG ON 4.7.44 ON THE AUTOMATIC GRINDING OF HARD METAL TOOLS). Studiengesellschaft Hartmetall, Berlin. Jul 1944. 3f (Text in German) Mi $1.25, Enl Pr $2.50. PB 100595
1. Tools - Manufacture - Germany 2. Machines, Grinding - Germany 3. Meier & Weichelt, Leipzig, Ger. 4. Micro BIOS HEC 11435 5. Micro BIOS FD 3952/47, Frames 1-2.
Abstract available as PB 100595s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 41. Machine is also described in BIOS FD 3957/47 (PB 100596) and FD 3963/47 (PB 100597).

DREHVERSUCHE MIT DEGUSSIT DREHSTÄHLEN IM GRUSONWERK AM 11.7. 1944 (TURNING TESTS WITH DEGUSSA TIPS AT THE GRUSON WORKS ON 11.7. 1944), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Sep 1944. 2f (Text in German) Mi $1.25, Enl Pr $2.50. PB 100599
1. Tools - Tests - Germany 2. Micro BIOS HEC 11444 3. Micro BIOS FD 3959/47, Frames 1-2.
Listed in BIOS FR 925 appx. I, p. 42. Abstract available as PB 100599s. 1p. Mi $1.25, Ph $1.25.

5000/10000/15000 TON FULLY HYDRAULIC FORGING PRESS. Hydraulik G.m.b.H., Duisburg, Ger. 1935-1937. 144f drawings only (Legends in German) Mi $5.75, Enl Pr $20.00. PB 100933

1. Machines, Forging - Germany 2. Presses, Hydraulic - Germany 3. Micro BIOS FD 210/48, Frames 1-23.

Some drawings will not reproduce well. Abstract available as PB 100933s. 2p. Mi $1.25, Ph $1.25.

MANUAL, CHAPTER 41: MAIN PROPELLING MACHINERY. SECTION II. DIESEL ENGINES. U. S. Bureau of Ships. May 1946. 28p graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15.

PB 110094r

1. Ships - Machinery - Operation 2. Ships - Propulsion 3. Engines, Diesel - Marine 4. NAVSHIPS 250-000-41S2.

See also Sections I:III-V, PB 110094: PB 110094r2-PB 110094r4.

MANUAL, CHAPTER 48: DISTILLING PLANTS. SECTION II. VAPOR COMPRESSION DISTILLING PLANTS. U. S. Bureau of Ships. Apr 1948. 41p photos, drawings Available from Supt. of Documents, U. S. Government Printing Office, Washington, 25, D. C. $.25. PB 110092r

1. Distilling plants - Cperation 2. NAVSHIPS 250-000-58S2.

MOBILE HIGH CAPACITY BLOWER UNIT, by M. W. Woody and Daniel Kasner. New York University, N. Y. Nov 1948. 11p photo, diagrs Mi $1.75, Ph $2.50.

PB 100529

A description of a mobile high capacity blower unit for providing a mobile air supply at comparatively low cost is given. The unit consists of a trailer on which are mounted a V-12 aircraft engine with its induction system modified to use the supercharger on an air compressor. Mounted on a locally fabricated engine mount and equipped with a suitable fly wheel, the unit has a cooling system which provides a controlled coolant outlet temperature without the necessity of dissipating the heat picked up in the cooling water. Fuel, oil, and electrical systems are similar to those in the F-51 fighter. The exhaust system is comprised of flexible exhaust pipes attached to a set of commercial mufflers. U. S. Navy project Squid. Technical memorandum no. NYU-5. Contract N6-ori-11, task order II nr 220-040.

PRODUCTION OF IRON POWDER. Demag A. G., Berlin. 1942-1944. 33f drawings only (Legends in German) Mi $2.25, Enl Pr $5.00. PB 110055

1. Machines, Casting - Centrifugal - Germany 2. Machines, Casting - Drawings - Germany 3. Micro BIOS DOCS 2204/1060/2/1-4 4. Micro BIOS FD 456/47, Frames 1-4.

Abstract available as PB 110055s. 1p. Mi $1.25, Ph $1.25. Some drawings may not reproduce well.

REDUCTION OF NOISE IN THE OPERATION OF LIGHT WEIGHT HIGH SPEED GASOLINE ENGINES. RESEARCH PROJECT ON AIRBORNE AND MECHANICAL NOISE, DEALING WITH ITS REDUCTION IN LIGHT WEIGHT HIGH SPEED GASOLINE ENGINES. FIRST QUARTERLY PROGRESS REPORT JUN 10. 1949-DEC 10, 1949. Illinois Institute of Technology, Chicago, Ill. 1949. 62p photos, drawings, graphs Mi $3.00, Ph $8.75. PB 100010

1. Engines, Gasoline - Knocking - Reduction 2. Noise - Reduction 3. U. S. Squier Signal Laboratory, Fort Monmouth, N. J.

Contract no. W36-039 sc-38215. File no. 3070-PH-49-5(3114)

SMALL TOOLS INDUSTRY, by Jai Chand. Sep 1949. 72p drawings (part fold), graphs, tables Mi $3.50, Ph $10.00. PB 100517
1. Tools - Manufacture - Japan.

STRAHLPUMPEN ZUR KRAFTSTOFFÖRDERUNG FÜR AR 234 (JET FUEL PUMPS FOR AR 234), by Kosin. Arado Flugzeugwerke G.m.b.H., Landeshut, Ger. Jul 1944. 39p drawing, graphs, tables (Text in German and English) Mi $2.25, Ph $5.00. PB 100386

The characteristic values of fuel jet-pumps with small conduit-pipe diameters are given in graphical and tabular form. In this paper, pump characteristics are calculated for operational altitudes up to 21,320 ft. Translated by O. W. Leibiger Research Laboratories, Inc., Petersburg, N. Y. AAF T-2 T/4799.

THEORETICAL EFFECT OF INLET HUB-TIP-RADIUS RATIO AND DESIGN SPECIFIC MASS FLOW ON DESIGN PERFORMANCE OF AXIAL-FLOW COMPRESSORS, by Chung-Hua Wu, John T. Sinnette, Jr. and Robert E. Forrette. U. S. National Advisory Committee for Aeronautics. Apr 1950. 33p diagrs, graphs Mi $2.25, Ph $5.00. PB 100715

Analysis was made of theoretical design performance of multistage axial-flow compressors, employing approximately symmetrical velocity diagrams at all radii, constant total enthalpy along radius, maximum Mach number of 0.8 for all stages, and prescribed turning limitation. Inlet hub-tip radius ratios of 0.6, 0.5, and 0.4, practical range of design specific mass flow for each, and number of stages to give exit hub-tip ratio of 0.9 were covered. N'CA TN 2068.

THEORETICAL STUDY OF THE THERMODYNAMIC CONDITIONS IN GAS TURBINES DUE TO BLADE COOLING BY THE USE OF LIQUID: RELATION BETWEEN THE TEMPERATURE OF AN UNCOOLED ROTOR BLADE AND THE GAS TEMPERATURE ENTERING THE NOZZLES AS AFFECTED BY THE TURBINE DESIGN, by W. R. Hawthorne and Antonia B. Walker. Massachusetts Institute of Technology. Gas Turbine Laboratory, Cambridge, Mass. Feb 1948. 16p diagrs, graphs Mi $1.75, Ph $2.50. PB 100528

A theoretical study has been made of the thermodynamic conditions in gas turbines due to blade cooling by the use of a liquid. Due to the relative motion of the blades the temperature of the rotor blades in a turbine is always less than the temperature of the gas entering the nozzle. This temperature difference has been analyzed generally and for certain types of turbine stage. Curves have been prepared to permit rapid calculations to be made. Technical report no. 1. Contract N5-ori-78, Task order 21.

VERSCHIEDENE HOCHDRUK-BRENNKAMMERN FÜR TURBINEN- UND STAHLTRIEBWERKE VOM STANDPUNKT DES WIRKUNGSGRADES AUS (EFFICIENCY OF COMPRESSORS), by Franz Neugebauer. 1942. 132p diagrs, drawings, graphs (Text in German and English) Mi $5.00, Enl Pr $18.75. PB 110241
1. Compressors - Efficiency - Germany 2. Germany. Zentrale für Wissenschaftliches Berichtswesen der Luftfahrtforschung 3. AAF T-2 T/886.

From Schriften der Deutschen Akademie der Luftfahrtforschung, 1942, s. 3-58. ZWB/DAL/1055-42(s.3). ZWB 10091. Translated and edited by Leibeger Research Laboratories, Inc., Petersburg, N. Y. 3 February 1948. Includes also: Schmidt, Ernst. Möglichkeiten der gas-turbine als flugzeugantrieb. 1942. From Deutschen Akademie der Luftfahrtforschung, 1942, s. 59-79. Text is in German only. ZWB/DAL/1055-42 (s.59).

ABHANDLUNG ÜBER DIE HERSTELLUNG VON LAGERORGANEN UND TRIEBWERKSTEILEN IN SPARSTOFFAUSFÜHRUNG UNTER BESONDERER BERÜCKSICHTIGUNG DES VERBUNDSGUSSVERFAHRENS "GIESSEN UND WEITERBEHANDELN IN GRAPHITFORM" (MANUFACTURE OF BEARING PARTS AND TRANSMISSION GEARS, USING SUBSTITUTE MATERIALS, WITH SPECIAL REFERENCE TO THE BONDCASTING PROCESS KNOWN AS "CASTING AND SUBSEQUENT TREATMENT IN GRAPHITE MOULDS"). Braunschweiger Hüttenwerk G.m.b.H., Brunswick, Ger. Sep 1941. 37f photos, diagrs, graph (Text in German and English) Mi $2.25, Enl Pr $6.25. PB 100849

1. Bearings - Manufacture - Germany 2. Gears, Transmission - Manufacture - Germany 3. Castings - Molds - Germany 4. Micro BIOS FD 1779/49, Frames 314-330+18.

Translation and abstract in English. Abstract available as PB 100849s. 1p. Mi $1.25, Ph $1.25.

ADVISORY REPORT ON INDEXING OF DIVISION 18 NDRC REPORTS: REPORTS ON ALUMINUM ALLOYS, by Helen L. Purdum. U. S. War Metallurgy Committee. Jun 1946. 42p Mi $2.50, Ph $6.25. PB 100626

An index of reports on aluminum alloys is prepared. The subject list of projects is concerned with beryllium-aluminum, fabrication, fatigue strength, high-temperature properties, effect of impurities, plastic flow and research. A numerical list of project reports and subject index listing reports on tests and properties of the alloys studied complete the report. OSRD 6666.

BEEINFLUSSUNG DES SCHWUNDES DURCH ZUGKRÄFTE BEIM SINTERN VON METALLPULVERN (CONTROLLING THE SHRINKAGE BY TENSILE FORCES WHEN SINTERING METAL POWDERS), by Dr. Dawihl and W. Rix. Studiengesellschaft Hartmetall, Berlin. Jun 1943. 12f photos, diagr, graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 100462

1. Metal powders - Sintering - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11397 4. Micro BIOS FD 3934/47, Frames 1-12.

Abstract available as PB 100462s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 p. 38.

BESEITIGUNG DER TEMPERATUREMPFINDLICHKEIT DES H1 HARTMETALLS DURCH VC ZUSATZ (REDUCTION OF TEMPERATURE SENSITIVITY OF H1 HARD METAL BY ADDING VANADIUM CARBIDE). Studiengesellschaft Hartmetall, Berlin. Nov 1943. 3f photos (Text in German) Mi $1.25, Enl Pr $2.50. PB 100640

1. H1 (Hard metal) 2. Vanadium carbides - Effect on hard metals - Germany 3. Metals, Hard - Production - Germany 4. BIOS FR 925 LD 5. Micro BIOS HEC 11412 6. Micro BIOS FD 3944/47, Frames 1-2.

BESTIMMUNG DER LÖSLICHKEIT VON KOBALT UND EISEN IN FESTEN HOCHSCHMELZENDEN KARBIDEN (DETERMINATION OF THE SOLUBILITY OF COBALT AND IRON IN SOLID CARBIDES OF HIGH MELTING POINT), by Dr. Dawihl.

Studiengesellschaft Hartmetall Berlin. Feb 1941. 4f table (Text in German) Mi $1.25, Enl Pr $2.50. PB 100652

1. Solvents - Germany 2. Cobalt - Solubility - Germany 3. Iron - Solubility - Germany 4. BIOS FR 925 LD 6. Micro BIOS HEC 11276 6. Micro BIOS FD 3864/47, Frames 1-3.

Abstract available as PB 100652s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 27.

BESUCH BEI DEM ELSÄSSISCHEN EISEN- UND STAHLWERK G.M.B.H. IN STRASSBURG AM 4. UND 5.8.43 (VISIT TO THE ELSASSICH IRON AND STEEL WORKS, STRASSBURG); BESUCH BEI DER FA.HERAEUS VACUUMSCHMELZE IN HANAU AM 22. DEZEMBER 1942 (VISIT TO HERAEUS VACUUMSCHMALZE IN HANAU). Studiengesellschaft Hartmetall, Berlin. 1942. 10f tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 100460

1. Dies - Manufacture - Germany 2. Munitions industry - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11387 5. Micro BIOS HEC 11399 6. Micro BIOS FD 3936/47, Frames 1-7.

Abstract available as PB 100460s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 p. 37-38.

CAUSE OF POROSITY OF KRUPP-WIDIA DRAWING DIES, SINTERED IN A CARBURIZING ATMOSPHERE. Studiengesellschaft Hartmetall, Berlin. 1939-1942. 24f photos (Text in German) Mi $2.00, Enl Pr $5.00. PB 100954

1. Metals, Hard - Sintering - Germany 2. Porosity - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11194 5. Micro BIOS HEC 11366 6. Micro BIOS HEC 11369 7. Micro BIOS FD 3916/47, Frames 1-22.

Listed in BIOS FR 925 appx. I, p. 18 and 35. Abstract available as PB 100954s. 2p. Mi $1.25, Ph $1.25.

CLEANING METALLIC SURFACES, III. U. S. Bureau of Ships. Mar 1950. 10p photos Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 110184

1. Metals - Cleaning 2. Steel, Stainless - Cleaning 3. Nickel - Cleaning 4. Aluminum - Cleaning 5. Zinc - Cleaning 6. Surfaces, Metallic - Cleaning 7. NAVSHIPS IN 103.

Industrial notes no. 103. For Parts I and II see PB 100493 and PB 100860.

EINE HILFSMETALLFREIE HARTLEGIERUNG FÜR SCHLICHTEN UND FEINSTDREHEN (A HARD METAL, FREE OF AUXILIARY ALLOYS, FOR FINE TURNING AND FINISHING), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Mar 1938. 4f photos (Text in German) Mi $1.25, Enl Pr $1.50. PB 100942

1. P4 (Hard metal) 2. Alloys, Hard - Structure - Germany 3. Carbides, Hard cemented - Germany 4. Tungsten-titanium-tantalum alloys - Germany 5. BIOS FR 925 LD 6. Micro BIOS HEC 11132 7. Micro BIOS FD 3783/47, Frames 1-3.

Listed in BIOS FR 925 appx. I. p. 13. Abstract available as PB 100942s. 1p. Mi $1.25, Ph $1.25.

ELECTROCHEMICAL STUDIES OF INHIBITIVE PIGMENTS, by L. J. Waldron. U. S. Naval Research Laboratory, Washington, D. C. Sep 1949. 29p diagrs, graphs Mimeo: $.75. PB 100791

This report covers the results obtained from electrochemical studies of selected pigments and the mechanism by which they may protect steel in the presence of

electrolytes. The work involved potential and polarization tests with steel in solutions containing pigments in dissolved and suspended states and as pastes. Known soluble inhibitors were included for comparison. NRL R3547.

EVALUATION OF IMPROVED MATERIALS AND METHODS OF FABRICATION FOR WELDED STEEL SHIPS TO THE BUREAU OF SHIPS, NAVY DEPARTMENT. PROGRESS REPORT, by R. W. Bennet and others. Mar 1949. 92p photos, drawings, graphs, tables Mi $4.25, Ph $12.50. PB 97684

This is the first progress report on Navy Department, Bureau of Ships Project SR 100. The principal objective of the report is to evaluate the usefulness of various mechanical tests of small welded steel specimens for indicating the performance of large welded structures. Fundamental factors contributing to the performance of such welded laboratory specimens are studied. Discussions of the influence of design on the transition temperatures of the specimens and of the criteria used for determining them are given. The results from limited tests of unwelded specimens are included and compared with those obtained from welded specimens. The tests were conducted on two semi-killed, as-rolled, medium carbon ship steels.

GALVANIC (VOLTAIC) CORROSION, by M. P. Ornstein. U. S. Army Air Forces. Air Technical Service Command. Aug 1947. 7p graph Mi $1.25, Ph $1.25. PB 100751

A discussion of galvanic corrosion with particular reference to sea water applications. AAF TSEPE 560-1.

GEFÜGEPRÜFUNG AN HARTMETALLEGIERUNGEN MIT $FEAL_3$ UND $TIAL_3$-HILFSMETALL (STRUCTURE OF HARD METALL ALLOYS WITH $FEAL_3$ AND $TIAL_3$ AUXILIARY METAL). Studiengesellschaft Hartmetall, Berlin. Jun 1941. 6f (Text in German) Mi $1.25, Enl Pr $2.50. PB 100450

1. Alloys, Hard - Structure - Germany 2. Aluminum-titanium alloys - Germany 3. Iron alloys - Germany 4. BIOS FR 925 LD 5. Micro BIOS HEC 11318 6. Micro BIOS FD 4005/47, Frames 1-5.

Abstract available as PB 100450s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925, p. 31.

GEFÜGEPRÜFUNG AN WIDIA F 1 MIT ERHÖHTEM HILFSMETALLGEHALT (EXAMINATION OF THE STRUCTURE OF WIDIA F 1 WITH A HIGH BINDER CONTENT) by Dawihl and Schmidt. Studiengesellschaft Hartmetall, Berlin. Jan 1942. 6f photos, graphs (Text in German) Mi $1.25, Enl Pr $2.50. PB 100946

1. Widia F1 2. F1 (Hard metal) 3. Metals, Hard - Structure - Germany 4. BIOS FR 925 LD 5. Micro BIOS HEC 11356 6. Micro BIOS FD 3907/47, Frames 1-5.

Listed in BIOS FR 925 appx. I, p. 34. Abstract available as PB 100946s. 1p. Mi $1.25, Ph $1.25.

HINWEISE ZUR ERKLÄRUNG UND VERHÜTUNG DER ZONENBILDUNG IN HARTMETALL (EXPLANATION AND PREVENTION OF ZONE FORMATION IN HARD METAL); ÜBER DIE ZONENBILDUNG IM HARTMETALL (ON THE FORMATION OF ZONES IN HARD METAL), by Dawihl and Rix. Studiengesellschaft Hartmetall, Berlin. Aug 1942-Jan 1943. 16f graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 100469

1. Metals, Hard - Structure - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11378 4. Micro BIOS HEC 11390 5. Micro BIOS FD 3930/47, Frames 1-15.

Abstract available as PB 100469s. 2p. Mi $1.25, Ph $1.25.

HYBLUM (ALUMINUM ALLOY), by Prof. von Halban. Metallgesellschaft A. G., Frankfort, Ger. Jan 1930. 7f graphs, tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 100962
1. Hyblum (Trade name) 2. Aluminum alloys - Tests - Germany 3. BIOS FR 335 LD 4. Micro BIOS FD 4832/47, Frames 255-260.
Abstract available as PB 100962s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 335.

IMPROVEMENT OF HIGH-TEMPERATURE PROPERTIES OF MAGNESIUM-CERIUM FORGING ALLOYS, by K. Grube, J. A. Davis, L. W. Eastwood, C. H. Lorig, and H. C. Cross. U. S. National Advisory Committee for Aeronautics. May 1950. 38p photos, diagrs, graphs, tables Mi $2.25, Ph $5.00. PB 110042
Results are presented from an investigation to improve the high-temperature properties and resistance to creep of magnesium-cerium alloys. Experimental heats were made by addition of a fourth element to the base composition which contained 6 percent cerium and 2 percent manganese. Tensile properties at 70° and 600° F were obtained and in addition most of the compositions were subjected to short-time creep tests at 600° F. NACA TN 2097.

INTERPRETATION OF BIAXIAL-TENSION EXPERIMENTS INVOLVING CONSTANT STRESS RATIOS, by S. B. Batdorf. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Feb 1950. 25p drawings, graphs, tables Mi $2.00, Ph $3.75. PB 100190
The slip theory of plasticity is applied to the problem of calculating the strains associated with biaxial tension for the case of constant stress ratios and is found to be in better agreement with experiment than the octahedral-shear and maximum-shear theories usually employed to analyze such data. NACA TN 2029.

INVESTIGATION OF SHEET MATERIALS FOR APPLICATION AT HIGH TEMPERATURES, by I. Perlmutter and W. H. Rector. U. S. Materiel Command. Engineering Division. Materials Laboratory, Wright Field, Dayton, Ohio. Jul 1948. 45p photos, graphs, tables Mi $2.50, Ph $6.25. PB 100384
Stress rupture tests at 1200°F on a number of sheet metal high nickel base alloys and stainless steel alloys with particular reference to their use in aircraft motor components replacing forgings a castings are discussed. AAF TR 5712.

INVESTIGATIONS ON THE VALIDITY OF AN IDEALIZED THEORY OF PLASTIC FLOW FOR ROLLED MILD STEELS. FIRST PROGRESS REPORT UNDER CONTRACT NO. N6ORI-III, TASK NO. 4 COVERING THE PERIOD FROM JUL 1946 TO FEB 1947, by T. R. Nelson, J. E. Dorn and E. R. Parker. Jan 1947. 55p photos, graphs, tables Mi $2.75, Ph $7.50. PB 100900
1. Steel - Plastic flow 2. Ships - Plates - Tests 3. U. S. David W. Taylor Model Basin, Carderock, Md.

MELTING AND MOLDING OF FERROUS AND NONFERROUS METALS AND ALLOYS: FOUNDRY MANUAL. U. S. Bureau of Ships. n.d. 162p photos, diagrs, drawings, tables Mi $6.25, Ph $21.25. Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.55 PB 110096
1. Metals, Ferrous - Melting 2. Metals, Ferrous - Molding 3. Metals, Non-ferrous - Melting 4. Metals, Non-ferrous - Molding 5. Alloys, Ferrous - Melting 6. Alloys, Ferrous - Molding 7. Alloys, Non-ferrous - Melting 8. Alloys, Non-ferrous - Molding 9. NAVSHIPS 250-0334.

METAL BOUND BORT DISCS FOR POLISHING AND GRINDING, AND THE WORKING OF PROKORUND (SINTERED ALUMINIUM OXIDE) WITH SUCH DISCS. Studiengesellschaft Hartmetall, Berlin. Apr-Jul 1941. 6f drawing (Text in German) Mi $1.25, Enl Pr $2.50. PB 100952

1. Diamond tools - Germany 2. Prokorund (Trade name) 3. Aluminum oxide - Germany 4. BIOS FR 925 LD 5. Micro BIOS HEC 11297 6. Micro BIOS HEC 11324 7. Micro BIOS FD 3915/47, Frames 1-5.

Listed in BIOS FR 925 appx. I, p. 29 and 31. Abstract available as PB 100952s. 1p. Mi $1.25, Ph $1.25.

METALLOGRAPHISCHE GEFÜGEUNTERSUCHUNG EINER PROFILZIEHMATRIZE AUS G-1 MATERIAL (ZONENBILDUNG UND BRÜCHE DER KÖRPER) (METALLOGRAPHIC EXAMINATION OF THE STRUCTURE OF A SECTION DRAWING DIE OF MATERIAL G1) (FORMATION OF ZONES AND FRACTURES), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Jan 1941. 6f photos (Text in German) Mi $1.25, Enl Pr $2.50. PB 100531

1. G1 (Metal) 2. Metals, Hard - Structure - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11266 5. Micro BIOS FD 3861/47, Frames 1-5.

English abstract included. Listed in BIOS FR 925, appx. I, p. 25.

PHOSPHATE COATINGS ON STEEL, PT. I, by Jeanne B. Burbank. U. S. Naval Research Laboratory, Washington, D. C. Jun 1949. 32p graphs, tables Mimeo: $1.00. PB 100863

First report in connection with study of phosphate coatings for steel to inhibit corrosion. Prior to experimental work, the technical literature was examined for data pertinent to the problem, however, the literature revealed little fundamental determination of the chemistry involved in phosphate coatings and processes. The initial phase of experimental investigation was started in which the solution rate of steel in phosphoric acid was measured in a series of experiments to determine how the rate is affected by differences in the controlling factors-reaction time, acid concentration, and temperature. Finally, these functions are evaluated for the experimental conditions of the study. For part II see PB 100514. NRL R3481.

PHOSPHATE COATINGS ON STEEL. PART II. X-RAY DIFFRACTION STUDY OF THE PHOSPHATES OF ZINC, IRON, AND MANGANESE, by Jeanne B. Burbank. U.S. Naval Research Laboratory, Washington, D. C. Jul 1949. 30p photos, graphs, tables Mimeo: $.75. PB 100514

Available X-ray diffraction data is extended to include those zinc, iron, and manganese phosphates most likely to be encountered in phosphating processes and coatings. Ten phosphates have been synthesized and their X-ray diffraction patterns established. These patterns, together with those previously established and available in the literature, constitute a comprehensive series of the neutral and acid phosphates of these metals. For part I see PB 100863. NRL R 3510.

PRINCIPLES OF GATING, by William H. Johnson, William O. Baker, and William S. Pellini. U. S. Naval Research Laboratory, Washington, D. C. Jan 1950. 20p photos, diagrs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.50. PB 110233

Studies of the flow of molten steel in terms of established hydrodynamic concepts for aqueous solutions have shown that critical interpretation is required inasmuch as the high density of liquid metals causes predominant momentum-pressure effects,

particularly during the initial stages of pouring. Uniform or sequence flow must necessarily be obtained through proper control of these effects. Two 16-mm sound films entitled "Finger Gating" and "Step Gating" have been made to illustrate the factors which influence the uniformity and sequence of flow of molten steel from finger and step gating systems. NRL R 3603.

PRÜFUNG WOLFRAMFREIER BZW. WOLFRAMARMER HARTMETALLE ON METALLWERK PLANSEE, 1.-3. BERICHTE (EXAMINATION OF TUNGSTEN-FREE OR LOW TUNGSTEN HARD METALS FROM PLANSEE, 1ST-3D REPORTS) PRÜFUNG WOLFRAMFREIER ODER WOLFRAMARMER HARTMETALLE VON BÖHLER, 1.-3. BERICHTE (EXAMINATION OF TUNGSTEN-FREE OR LOW TUNGSTEN HARD METALS FROM BÖHLER, 1ST-3D REPORTS). Studiengesellschaft Hartmetall, Berlin. Nov 1943-Mar 1944. 16f photos, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 100598

1. Metals, Hard - Tests - Germany 2. Böhler, Gebr. & Co., A. G., Düsseldorf, Ger. 3. Metallwerk Plansee G.m.b.H., Reutte, Austria 4. BIOS FR 925 LD 5. Micro BIOS HEC 11415 6. Micro BIOS HEC 11416 7. Micro BIOS HEC 11422 8. Micro BIOS HEC 11423 9. Micro BIOS HEC 11430 10. Micro BIOS HEC 11445 11. Micro BIOS FD 3960/47, Frames 1-16.

Listed in BIOS FR 925 appx. I, p. 39-41.

PRÜFUNG WOLFRAMFREIER HARTMETALLE AUS TIC, VC,CR_3 C_2 UND HILFSMETALL (TESTING OF TUNGSTEN-FREE HARD METALS FROM TIC, VC, CR_3 C_2 AND BINDERS), by Schmidt. Studiengesellschaft Hartmetall, Berlin. Jan 1942. 4f photos, tables (Text in German) Mi $1.25, Enl Pr $1.50. PB 100947

1. Metals, Hard - Tests - Germany 2. Titanium carbides - Structure - Germany 3. Vanadium carbides - Structure - Germany 4. BIOS FR 925 LD 5. Micro BIOS HEC 11355 6. Micro BIOS FD 3906/47, Frames 1-3.

Abstract available as PB 100947s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 34.

REPORT ON (1) THE INFLUENCE OF MILLING AND GRAIN SIZE OF WC ON THE SOLID SOLUTION FORMATION IN "S1"; (2) THE RELATIONSHIP BETWEEN SPECIFIC GRAVITY AND SOLID SOLUTION FORMATION IN THE SYSTEM TIC-WC AND A RELATIONSHIP BETWEEN SPECIFIC GRAVITY AND THE COMPOSITION OF THE HARD METAL; (3) INFLUENCE OF METHOD AND DURATION OF MILLING ON HARD METALS; (4) RELATION BETWEEN STRUCTURE OF HARD METAL AND THE ORDER IN WHICH COMPONENTS ARE GROUND. Studiengesellschaft Hartmetall, Berlin. Jul 1942-Apr 1943. 55f photos, graphs, tables (Text in German) Mi $2.75, Enl Pr $8.75. PB 100641

1. S1 (Hard metal) 2. Metals, Hard - Structure - Germany 3. Metals, Hard - Production - Germany 4. Titanium compounds - Production - Germany 5. BIOS FR 925 LD 6. Micro BIOS HFC 11376 7. Micro BIOS HEC 11379 8. Micro BIOS HEC 11394 9. Micro BIOS HEC 11411 10. Micro BIOS FD 3943/47, Frames 1-53.

Abstract available as PB 100641s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 36-37, 39.

REPORT ON RESEARCH ON THE WELDABILITY OF IRON ALLOYS (A COMPARISON OF TESTS FOR WELDABILITY OF TWENTY LOW-CARBON STEELS), by C.E. Jackson and G. G. Luther. U. S. Naval Research Laboratory. Anacostia Station, Washington, D. C. Aug 1940. 55f photos, diagrs, graphs, tables Mi $2.75, Enl Pr $8.75 PB 100415

The weldability of 20 plain carbon steels using 8 methods for testing was investigated. The steels used for this investigation covered a wide range of carbon content but a narrow range for the other constituents. The weldability tests which were studied are: single V-groove weld, T-bend, V-notched slow-bend, V-notchen impact, longitudinal bead-weld slow-bend, maximum hardness, weld-quench, and cold-rolling. The relative merits of these tests are discussed. NRL M-1642.

REPORTS ON EXPERIMENTS IN IMPROVING THE PERFORMANCE OF HARD METALS. Studiengesellschaft Hartmetall, Berlin. 1941-1945. 32f photos (Text in German) Mi $2.25, Enl Pr $6.25. PB 100578

1. Metals, Hard - Cutting - Germany 2. Titanium carbides - Crystals - Germany 3. S1 (Hard metal) 4. BIOS FR 925 LD 5. Micro BIOS HEC 11273 6. Micro BIOS HEC 11277 7. Micro BIOS HEC 11285 8. Micro BIOS HEC 11300 9. Micro BIOS HEC 11301 10. Micro BIOS HEC 11322 11. Micro BIOS HEC 11346 12. Micro BIOS HEC 11368 13. Micro BIOS HEC 11460 14. Micro BIOS HEC 11343 15. Micro BIOS FD 3974/47, Frames 1-29.

Abstract available as PB 100578s. 2p. Mi $1.25, Ph $1.25. Abstract gives titles of the ten reports. Listed in BIOS FR 925, appx. I, p. 26-27, 29-31, 33, 35.

RESISTANCE OF SIX CAST HIGH-TEMPERATURE ALLOYS TO CRACKING CAUSED BY THERMAL SHOCK, by M. J. Whitman, R. W. Hall, and C. Yaker. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio. Feb 1950. 26p photos, drawings, graphs, tables Mi $2.00, Ph $3.75. PB 100297

The relative resistance of six cast high-temperature alloys to cracking caused by thermal shock was investigated. Modified wedge-shaped specimens were uniformly heated to 1750° F and subjected to a controlled water quench of one edge. This cycle was repeated until a thermal-shock failure occurred. NACA TN 2037.

REVIEW OF INFORMATION ON THE MECHANICAL PROPERTIES OF ALUMINUM ALLOYS AT LOW TEMPERATURES, by K. O. Bogardus, G. W. Stickley, and F. M. Howell. U. S. National Advisory Committee for Aeronautics. May 1950. 65p tables Mi $3.00, Ph $8.75. PB 100872

A summary of the available information on the mechanical properties of aluminum alloys at temperatures ranging from normal room temperature down to the temperature of boiling liquid hydrogen. From a review of the data presented, and the conclusions expressed by the authors of the articles reviewed, general conclusions are drawn regarding the aluminum alloys used commercially in this country. NACA TN 2082.

ROTATING DISC APPARATUS FOR THE PRODUCTION OF IRON POWDER. Demag A. G., Mülheim, Ger. 1941-1944. 230f drawings only (Legends in German) Mi $8.00, Enl Pr $30.00. PB 110056

1. Iron powders - Manufacture - Germany 2. D.P.G. disc process 3. Micro BIOS DOCS 1982/2049 (111-148) 4. Micro BIOS FD 879/47, Frames 1-38.

Abstract available as PB 110056s. 1p. Mi $1.25, Ph $1.25. Some drawings may not reproduce well. Machine is mentioned in BIOS FR 1223 (PB 79440). For further description see PB 90233.

STRESS-STRAIN AND ELONGATION GRAPHS FOR ALUMINUM-ALLOY 75S-T6 SHEET, by James A. Miller. U. S. National Advisory Committee for Aeronautics. Apr 1950. 37p graphs, tables Mi $2.25, Ph $5.00. PB 100868

Results of tests on duplicate longitudinal and transverse specimens of aluminum-alloy 75S-T6 sheets with nominal thicknesses of 0.032, 0.064, and 0.125 inch are presented in the form of graphs. Tensile and compressive stress-strain graphs and stress-deviation graphs to a strain of about 1 percent, graphs of tangent modulus against compressive stress, and auxiliary graphs for estimating plastic buckling stress are plotted on a dimensionless basis. Stress-strain graphs and graphs of local elongation and of elongation against gage length are also included for tensile specimens tested to fracture. NACA TN 2085.

TROCKENMAHLUNG VON WOLFRAMARBEID (DRY MILLING OF TUNGSTEN CARBIDE); TROCKENMAHLVERSUCH MIT WOLFRAMPULVER (DRY MILLING TESTS WITH TUNGSTEN POWDER). Studiengesellschaft Hartmetall, Berlin. Nov-Dec 1938. 7f photos, tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 100959
1. Tungsten carbide - Production - Germany 2. Metal powders - Production - Germany 3. Micro BIOS HEC 11153 4. Micro BIOS HEC 11156 5. Micro BIOS FD 3974/47, Frames 1-7.
Listed in BIOS FR 925 appx. I, p. 15. Abstract available as PB 100959s. 2p. Mi $1.25, Ph $1.25.

UEBER DEN GEFÜGEAUFBAU UND DIE TEMPERATUREN DER SPÄNE BEIM DREHEN VON STAHL, VON DR. W. DAWIHL (STRUCTURE AND TEMPERATURE OF CHIPS IN STEEL TURNING). Studiengesellschaft Hartmetall, Berlin. n.d. 12f photos, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 100575
1. Steel chips - Structure - Germany 2. Steel chips - Temperature - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11464 5. Micro BIOS FD 3977/47, Frames 1-12.
Listed in BIOS FR 925 appx. I, p. 44.

ÜBER DEN NACHWEISS DER DELTA PHASE BEIM SINTERN VON HARTMETALL N IN ALUMINIUMOXYDEINPACKUNG (DETECTION OF THE DELTA PHASE BY SINTERING N-HARD METAL PACKED IN ALUMINA); ÜBER DIE ZUSAMMENSETZUNG UND DIE ZUSAMMENHÄNGE DER DELTA PHASEN (COMPOSITION AND INTER RELATIONS OF THE DELTA PHASE). Studiengesellschaft Hartmetall, Berlin. Nov 1938-Jan 1939. 21f photos (Text in German) Mi $2.00, Enl Pr $5.00. PB 100953
1. N (Hard metal) 2. Metals, Hard - Sintering - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11154 5. Micro BIOS HEC 11165 6. Micro BIOS FD 3914/47, Frames 1-19.
Listed in BIOS FR 925 appx. I, p. 15-16. Abstract available as PB 100953s. 2p. Mi $1.25, Ph $1.25.

UEBER DER VERÄNDERUNG DER KRISTALLISATION UND POROSITÄTSVERTEILUNG IN EISENSINTERKÖRPERN AUS VERSCHIEDENEN PULVERSORTEN (CHANGES IN THE CRYSTAL FORM AND DISTRIBUTION OF POROSITY IN SINTERED IRON COMPACTS MADE FROM DIFFERENT TYPES OF POWDERS). Studiengesellschaft Hartmetall, Berlin. Nov 1944. 18f graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 100594
1. Iron powder compacts - Physical properties - Germany 2. Iron powder compacts - Tests - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11449 5. Micro BIOS FD 3964/47, Frames 1-17.
Abstract available as PB 100594s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 43.

UEBER DIE BIEGEBRUCHFESTIGKEIT WOLFRAMFREIER HARTMETALLE AUS TIC-VC-HILFSMETALL (ULTIMATE BEND STRENGTH OF TUNGSTEN-FREE HARD METAL OF TIC-VC SERIES). Studiengesellschaft Hartmetall, Berlin. Feb 1945. 2f tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 100576

1. Metals, Hard - Bending - Germany 2. Titanium carbide - Germany 3. Vanadium carbides - Germany 4. BIOS FR 925 LD 5. Micro BIOS HEC 11462. 6. Micro BIOS FD 3976/47, Frames 1-2.

Listed in BIOS FR 925 appx. I, p. 44.

ÜBER DIE EXTRAKTION VON ALUMINIUM AUS LEGIERUNGEN MITTELS QUECKSILBER (RECOVERY OF ALUMINUM FROM ALLOYS BY MEANS OF MERCURY), by Dr. Hölemann. I. G. Farbenindustrie A. G., Bitterfeld, Ger. 1945. 20f photo, drawings, diagrs, graph (Text in German and English) Mi $1.75, Enl Pr $3.75. PB 100924

1. Aluminum - Recovery - Germany 2. BIOS FR 1703 LD 3. Micro BIOS DOCS 1901/569/4 4. RTP/TIB T3467 5. Micro BIOS FD 226/48, Frames 1-18.

Abstract available as PB 100924s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 1703, p. 15.

UEBER DIE LEGIERUNGSBILDUNG ZWISCHEN KUPFER UND WOLFRAMKARBID (ALLOY FORMATION BETWEEN COPPER AND TUNGSTEN CARBIDE); UEBER DEN EINFLUSS EINES KUPFER BZW. KUPFERHALTIGEN HILFSMETALLS AUF DIE VERSINTERUNG DES HARTMETALLS (INFLUENCE OF COPPER OR COPPER BEARING BINDER ON THE SINTERING OF HARD METAL), by Dawihl and Schmidt. Studiengesellschaft Hartmetall, Berlin. Jul 1940-Aug 1942. 6f photos, graph (Text in German) Mi $1.25, Enl Pr $2.50. PB 100654

1. Tungsten-copper alloys - Germany 2. Metals, Hard - Sintering - Effect of copper - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11230 5. Micro BIOS HEC 11377 6. Micro BIOS FD 3923/47, Frames 1-6.

Listed in BIOS FR 925 appx. I, p. 22 and 36.

UEBER SINTERKÖRPER AUS EISEN MIT MNO-CR_2 O- ZUSATZ (SINTERED COMPACTS OF IRON WITH MNO-CR_2 O_3 ADDITIONS). Studiengesellschaft Hartmetall, Berlin. Jan 1945. 10f graphs, tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 100579

1. Iron powder compacts - Tests - Germany 2. Iron alloys, Sintered - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11458 5. Micro BIOS FD 3973/47, Frames 1-9.

Abstract available as PB 100579s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 44.

UEBER VERSUCHE ZUR ERKLÄRUNG DER UNTERSCHIEDLICHEN KRISTALLHÄRTE DER EISENSINTERKÖRPERN AUS VERSCHIEDENEN PULVERSORTEN (AN EXPLANATION OF THE VARYING CRYSTAL HARDNESS OF SINTERED IRON BODIES MADE FROM DIFFERENT TYPES OF POWDER), by Dr. Schmidt. Studiengesellschaft Hartmetall, Berlin. Dec 1944. 4f (Text in German) Mi $1.50, Enl Pr $2.50. PB 100591

1. Iron powder compacts - Physical properties - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11454 4. Micro BIOS FD 3968/47, Frames 1-4.

Listed in BIOS FR 925 appx. I, p. 43.

UEBER ZUSAMMENHÄNGE ZWISCHEN DEM AUSDEHNUNGSVERHALTEN UND DEN EIGENSCHAFTEN VON METALLPULVERN (RELATION BETWEEN EXPANSION AND THE CHARACTERISTICS OF METAL POWDERS), by Dr. Dawihl and W. Rix. Studiengesellschaft Hartmetall, Berlin. n.d. 13f tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 100574

1. Metal powders - Physical properties - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11465 4. Micro BIOS FD 3978/47, Frames 1-11.

Abstract available as PB 100574s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 44.

UEBER ZUSAMMENHÄNGE ZWISCHEN HERSTELLUNGSVERFAHREN VON EISENPULVERN UND DER KRISTALLHÄRTE, VON W. DAWIHL UND U. SCHMIDT (RELATIONSHIP BETWEEN MANUFACTURING PROCESSES AND CRYSTALLINE HARDNESS IN IRON POWDER). Studiengesellschaft Hartmetall, Berlin. Feb 1945. 6f graph, tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 100577

1. Iron powders - Manufacture - Germany 2. Iron powders - Physical properties - Germany 3. Micro BIOS HEC 11461 4. Micro BIOS FD 3975/47, Frames 1-6.

Listed in BIOS FR 925 appx. I, p. 44.

UNTERSUCHUNG ÜBER DIE WOLFRAMGEHALTE IM SCHLEIFSTAUB IM VERGLEICH ZUM HARTMETALLEINSATZ (INVESTIGATION OF THE TUNGSTEN CONTENT OF GRINDING DUST, COMPARED WITH THE AMOUNT OF HARD METAL USED), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Nov 1943. 5f (Text in German) Mi $1.25, Enl Pr $2.50. PB 100642

1. Metals, Hard - Grinding - Waste - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11410 4. Micro BIOS FD 3942/47, Frames 1-3.

Abstract available as PB 100642s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925, p. 39.

UNTERSUCHUNGEN IM GEBIETE HOHER UND HÖCHSTER TEMPERATUREN: SINTERUNGSVERHALTEN VON ALUMINUMOXYDGEGENSTÄNDEN UND HERSTELLUNG VON ZIRKONMETALL (INVESTIGATIONS IN THE RANGE OF HIGH AND VERY HIGH TEMPERATURES THE BEHAVIOUR OF ALUMINUM OXIDE ARTICLES DURING SINTERING AND THE PRODUCTION OF ZIRCONIUM METAL), by Walter Dawihl. 1934. 32f drawings, graphs, tables (Text in German) Mi $2.25, Enl Pr $6.25. PB 100451

1. Aluminum oxide - Sintering - Germany 2. Furnaces, Sintering - Germany 3. Zirconium - Production - Germany 4. Zirconium compounds - Production - Germany 5. BIOS FR 925 LD 6. Micro BIOS HEC 11502 7. Micro BIOS FD 4000/47, Frames 1-31.

Reprinted from Tonindustrie zeitung 1934 nr. 37-40, 58. Abstract available as PB 100451s. 2p. Mi $1.25, Ph $1.25.

VERGLEICH DER SCHNEIDLEISTUNGEN VON HARTMETALL N UND XX AM GRAUGUSS (COMPARISON OF THE CUTTING EFFICIENCIES ON GREY CAST IRON OF HARD METALS N AND XX). Studiengesellschaft Hartmetall, Berlin. 1938. 5f (Text in German) Mi $1.25, Enl Pr $1.50. PB 100961

1. N (Hard metal) 2. XX (Hard metal) 3. Metals, Hard - Cutting tests - Germany 4. BIOS FR 925 LD 5. Micro BIOS HEC 11660 6. Micro BIOS FD 3794/47, Frames 1-4.

Listed in BIOS FR 925 appx. I, p. 15. Abstract available as PB 100961s. 1p. Mi $1.25, Ph $1.25.

VERSUCHE ZUR HERSTELLUNG ZÄHHARTER LEGIERUNGEN (EXPERIMENTS IN THE MANUFACTURE OF TOUGH HARD ALLOYS) 1ST-7TH REPORT. Studiengesellschaft Hartmetall, Berlin. 1940-1941. 29f tables (Text in German) Mi $2.00, Enl Pr $5.00. PB 100530

1. Alloys, Hard - Production - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11250 4. Micro BIOS HEC 11254 5. Micro BIOS HEC 11255 6. Micro BIOS HEC 11258 7. Micro BIOS HEC 11259 8. Micro BIOS HEC 11261 9. Micro BIOS HEC 11267 10. Micro BIOS FD 3862/47, Frames 1-27.

Abstract available as PB 100530s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 24-25.

VERWENDUNG VON WOLFRAMSÄURE AUS CALCIUM-WOLFRAMAT FÜR DIE HARTMETALLHERSTELLUNG (USE OF TUNGSTIC ACID, PRODUCED FROM CALCIUM TUNGSTATE, IN THE MANUFACTURE OF HARD METALS). Studiengesellschaft Hartmetall, Berlin. Nov 1941. 5f tables (Text in German) Mi $1.25, Enl Pr $1.50. PB 100948

1. G 1 (Hard metal) 2. S 1 (Hard metal) 3. Tungstic acid - Germany 4. Metals - Hard - Production - Germany 5. BIOS FR 925 LD 6. Micro BIOS HEC 11349 7. Micro BIOS FD 3904/47, Frames 1-4.

Listed in BIOS FR 925 appx. I, p. 34. Abstract available as PB 100948s. 1p. Mi $1.25, Ph $1.25.

WELDING EXPERIMENTS WITH HARD METALS, IRON, STEEL AND COPPER. Studiengesellschaft Hartmetall, Berlin. 1940-1941. 54f photos, graphs, tables (Text in German) Mi $2.75, Enl Pr $8.75. PB 100943

1. Iron - Welding - Germany 2. Metals, Hard - Welding - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11217 5. Micro BIOS HEC 11290 6. Micro BIOS HEC 11323 7. Micro BIOS HEC 11348 8. Micro BIOS FD 3903/47, Frames 1-52.

Listed in BIOS FR 925 appx. I, p. 21, 28, 31, 33. Abstract available as PB 100943s. 2p. Mi $1.25, Ph $1.25.

ZUM STAND DER VERSUCHE ÜBER DAS MAHLEN VON HARTMETALLPULVER (POSITION OF THE INVESTIGATION ON THE MILLING OF HARD METAL POWDERS). Studiengesellschaft Hartmetall, Berlin. May 1940. 7f (Text in German) Mi $1.25, Enl Pr $2.50. PB 100957

1. Metal powders - Production - Germany 2. Micro BIOS DOCS 2012/2984 3. Micro BIOS FD 3832/47, Frames 1-6.

Abstract available as PB 100957s. 1p. Mi $1.25, Ph $1.25.

METEORALOGY AND CLIMATOLOGY

THEORETICAL ASPECTS OF PRESSURE-PATTERN FLYING, compiled by J. S. Sawyer. Gt. Brit. Air Ministry. Meteorological Office. 1949. 66p diagrs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.35. PB 99886

It is the purpose of the present memorandum to describe and review critically the various techniques of pressure-pattern flying and thus to provide the meteorologist with a basis for advice to the air navigator who is applying these methods. The various techniques of pressure pattern flying can be conveniently divided as follows:

a) methods of obtaining drift and pressure position lines from altimeters observations; b) single-heading flight; c) preflight planning to obtain the minimum time of flight and avoid bad weather; d) the use, either on the ground or in the air, of pressure observations made during flight in order to improve the intended course in respect of the duration of the flight and weather. Meteorological reports no. 3 (Third number of Vol. 1). AM MO 496c.

OCCURRENCE OF ICE CRYSTAL NUCLEI IN THE FREE ATMOSPHERE, by Vincent J. Schaefer. Occasional report number 20, Project Cirrus. General Electric Co., Research Laboratory, Schenectady, N. Y. Jan 1950. 29p photos, diagrs, tables Mi $2.00, Ph $3.75. PB 110239

1. Ice formation 2. GE RL 308.

Supported jointly by the Signal Corps and Office of Naval Research under Signal Corps Contract no. W-36-039-SC-38141. Signal Corps Project 172B.

PROJECT CIRRUS, BY VINCENT J. SCHAEFER. QUARTERLY PROGRESS REPORT NO. 11. General Electric Co. Research Laboratory, Schenectady, N. Y. Mar 1950. 12p table Mi $1.75, Ph $2.50. PB 110238

1. Silver iodide 2. Rain, Simulated 3. Clouds - Formation 4. GE RL 356.

Report RL 356. Sixth quarterly progress report issued under contract no. W-36-039-sc-38141. Signal Corps Project 172B. For other progress reports see PB 98870, PB 98871 and PB 99434.

MINERALS AND MINERAL PRODUCTS

CHLORIERUNG VON BAUXIT (CHLORIDATION OF BAUXIT). Metallgesellschaft A. G., Frankfort, Ger. Dec 1929. 4f (Text in German) Mi $1.25, Enl Pr $1.50. PB 100965

1. Bauxite - Germany 2. BIOS FR 335 LD 3. Micro BIOS HEC 12014 4. Micro BIOS FD 4824/47, Frames 70-73,

Listed in BIOS FR 335. Abstract available as PB 100965s. 1p. Mi $1.25, Ph $1.25.

CRYSTAL CHEMISTRY AND OPTICAL PROPERTIES OF DEFECT STRUCTURES. PART A. GENERAL TREATMENT, by W. A. Weyl and T. Forland. Pennsylvania State College. School of Mineral Industries, State College, Pa. Mar 1949. 101p tables Mi $4.50, Ph $13.75. PB 110231

1. Minerals - Color 2. Crystallography 3. PSC SMI TR 2.

Contract no. N6onr 269 Task order no. 11. NR 032-265.

FLUE DUST, FOUR REPORTS, by W. Schenker. I. G. Farbenindustrie A. G., Oppau, Ger. Jul 1941-Jan 1944. 43f photos, graphs, tables (Text in German) Mi $2.50, Enl Pr $7.50. PB 100967

1. Ashes - Uses - Germany 2. Micro BIOS FD 2867/46, item 1, Frames 1-40.

Abstract available as PB 100967s. 2p. Mi $1.25, Ph $1.25.

REPORT ON CERAMIC INDUSTRY IN JAPAN, by Saral K. Deb. Oct 1949. 52p map, tables (part fold) Mi $2.75, Ph $7.50. PB 100369

This report presents scientific and technical information and studies made by the author Saral K. Deb, Technical Representative for Ceramic Industry of the Govern-

ment of India. The following branches of the Japanese Ceramic Industry are covered: Art Pottery, chemical stoneware, porcelain ware, semi-porcelain products, sanitary ware, glazed wall tiles, chemical porcelain, and electric insulators.

TABLES OF FLUORESCENT AND RADIOACTIVE MINERALS, COMPILED by Robert L. Hershey. New Mexico. School of Mines. Bureau of Mines and Mining Resources. 1947. 13p tables Available from New Mexico. Bureau of Mines and Mineral Resources, School of Mines, Socorro, New Mexico. PB 110075
1. Minerals, Radioactive - Fluorescence.
Circular 15.

PHYSICS

General

APPLICATION OF THE W.K.B. METHOD TO THE FLOW OF A COMPRESSIBLE FLUID, I., by Isao Imai. n.d. 17p Mi $1.75, Ph $2.50. PB 96525
1. Fluids, Compressible - Japan 2. Tokyo. Imperial University. Department of Physics.

EQUILIZATION AND TABULATION OF EMPIRICAL FUNCTIONS BY MEANS OF DIFFERENCES, by L. Collatz and R. Zurmuhl. Sep 1944. 20p graphs, tables Mi $1.75, Ph $2.50. PB 96250
1. Mathematical equations and solutions - Germany 2. Mathematics, Applied - Germany 3. BIOS HEC 10571.

GASKINETIK SEHR HOHER FLUGGESCHWINDIGKEITEN. (GAS KINETICS OF VERY HIGH FLIGHT SPEEDS), by Eugen Sanger. May 1950. 49p diagrs, graphs Mi $2.50, Ph $6.25. PB 110072
Aerodynamic forces on bodies of arbitrary shape were investigated under conditions such that the mean free path of the air molecule is greater than the dimensions of the body. Air pressures and friction forces were calculated from gas kinetic theory for surfaces facing both toward and away from the air stream at any angle. Air forces for an atmosphere of definite composition (molecular hydrogen) were calculated as a function of the flight velocity. The results indicate that the friction stresses between the air and the body surface are of the same magnitude as the dynamic pressure and as the air pressures normal to the surface. Translation from Zentrale für wissenschaftliches berichtwesen über luftfahrtforschung. Forschungsbericht, nr. 972, May 31, 1938. ZWB FB 972, trans. NACA TM 1270.

NEKOTORYE RABOTY O TECHENIAKH GAZA V OBLASTI PEREKHODA CHEREZ SKOROST ZVUKA. (SOME STUDIES ON THE FLOW OF A GAS IN THE REGION OF TRANSITION THROUGH THE VELOCITY OF SOUND), by I. A. Kiebel. Apr 1950. 12p diagr Mi $1.75, Ph $2.50. PB 100719
Some studies have been made of the flow of gas in the region of transition through the velocity of sound. The flow equations in hodograph variables are modified to fit the immediate neighborhood of sound speed. The paper discusses the consequences of this modification on the gas motion. Translation from Izvestia Akademii Nauk SSSR, no. 3, 1947. NACA TM 1252.

SELF-CONSISTENT SUBTRACTION METHODS IN THE QUANTUM FIELD THEORY II, by Hiroshi Fukuda and others. n.d. 12p Mi $1.75, Ph $2.50. PB 96527

SUMMARIES OF FOREIGN AND DOMESTIC REPORTS ON COMPRESSIBLE FLOW, BY THE GRADUATE DIVISION OF APPLIED MATHEMATICS, BROWN UNIVERSITY. VOL. 1. NUMBERS A 9001 TC A-9025. U. S. Air Materiel Command. Intelligence Dept. Analysis Division, Wright Field, Dayton, Ohio. Nov 1947. 84p diagrs, graphs, tables Mi $3.75, Ph $11.25. PB 110240
1. AAF TR 1168A.
For Vols. II-V sse PB 98379 - PB 98382.

RUBBER AND RUBBER PRODUCTS

BUNA TYPE S4, POLYMERIZED WITHOUT FATTY ACID. I. G. Farbenindustrie A.G., Schkopau, Ger. 1942-1944. 87f (Text in German) Mi $3.75, Enl Pr $12.50. PB 110027
1. Buna S 4 (Trade name) 2. Rubber, Buna - Polymerization - Germany 3. Rubber, Buna - Tests - Germany 4. Micro BIOS FD 2161/47, Frames 1-86.
Abstract available as PB 110027s. 1p. Mi $1.25, Ph $1.25. See also Micro BIOS FD 2246/47 (PB 110026).

INVESTIGATION OF RUBBER PLASTICIZERS FOR LOW TEMPERATURE APPLICATIONS, by E. R. Bartholomew. U. S. Air Materiel Command, Engineering Division, Wright Field, Dayton, Ohio. May 1949. 30f graphs, tables Mi $2.00, Enl Pr $5.00. PB 110105
1. Rubber - Plasticizers 2. Plasticizers - Physical properties 3. AAF TR 5891.

KUTEKO CIRCULARS RELATING TO THE TESTING OF NEW LABORATORY PRODUCTS FOR IGELIT PCU (P.V.C.). I. G. Farbenindustrie A. G., Schkopau, Ger. 19f (Text in German) Mi $1.75, Enl Pr $3.75. PB 100931
1. Igelit PCU (Trade name) 2. Polyvinyl chloride, Unchlorinated - Plasticizers - Germany 3. Micro BIOS FD 2297/47, Frames 1-18.
English abstract included.

LOG BOOKS OF IGELIT PCU TESTS, ETC., SUCTION DRYING TESTS, ETC. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1945. 344f graphs, tables (Text in German) Mi $9.00, Enl Pr $46.25. PB 110030
1. Igelit PCU (Trade name) 2. Polyvinyl chloride, Unchlorinated - Production - Germany 3. Micro BIOS FD 2288/47, Frames 1-335.
Abstract available as PB 110030s. 2p. Mi $1.25, Ph $1.25.

PLASTICIZER SCHKO 1 (MOLLIT BG) FOR IGELIT PCU (P.V.C.). I. G. Farbenindustrie A. G., Schkopau, Ger. 1942-1944. 90f tables (Text in German) Mi $3.75, Enl Pr $12.50. PB 110032
1. Schko 1 (Trade name) 2. Igelit PCU (Trade name) 3. Plasticizers - Production - Germany 4. Micro BIOS FD 2577/47, Frames 1-89.
Abstract available as PB 110032s. 2p. Mi $1.25, Ph $1.25.

PLASTICIZERS SCHKO 4 AND SCHKO 5 FOR IGELIT PCU (P.V.C.). I. G. Farbenindustrie A. G., Schkopau, Ger. 1942-1943. 24f tables (Text in German) Mi $2.00, Enl Pr $5.00. PB 110031

1. Schko 4 (Trade name) 2. Schko 5 (Trade name) 3. Igelit PCU (Trade name) 4. Plasticizers - Tests - Germany 5. Micro BIOS FD 2393/47, Frames 1-23.

Abstract available as PB 110031s. 1p. Mi $1.25, Ph $1.25.

PLASTICIZER SCHKO 9 FOR LACQUERS AND IGELIT PCU (P.V.C.). I. G. Farbenindustrie A. G., Schkopau, Ger. 1943-1944. 41f (Text in German) Mi $2.50, Enl Pr $7.50. PB 110033

1. Schko 9 (Trade name) 2. Igelit PCU (Trade name) 3. Plasticizers - Tests - Germany 4. Phthalic acid - Esters - Germany 5. Micro BIOS FD 2578/47, Frames 1-40.

Abstract available as PB 110033s. 1p. Mi $1.25, Ph $1.25.

POLYMERISATION TESTS ON BUNA TYPES S3 AND S4; ACCELERATORS, REGULATORS, STABILISERS, ETC; ANALYSES, TESTING INSTRUMENTS, ETC. I. G. Farbenindustrie A. G., Schkopau, Ger. 1941-1944. 131f photos, graphs, tables (Text in German) Mi $5.50, Enl Pr $18.75. PB 110026

1. Buna S3 (Trade name) 2. Buna S4 (Trade name) 3. Rubber, Buna - Polymerization - Germany 4. Rubber, Buna - Activators - Germany 5. Rubber, Buna - Stabilizing agents - Germany 6. Rubber, Buna - Tests - Germany 7. Micro BIOS FD 2246/47, Frames 1-125.

Abstract available as PB 110026s. 2p. Mi $1.25, Ph $1.25. See also PB 95576, PB 98164, PB 110027.

PRODUCT SCHKO 2 FOR IGELIT PCU (P.V.C.). I. G. Farbenindustrie A. G., Schkopau, Ger. 1942. 14f (Text in German) Mi $1.75, Enl Pr $3.75. PB 100935

1. Schko 2 (Trade name) 2. Igelit PCU (Trade name) 3. Polyvinyl chloride - Plasticizers - Germany 4. Micro BIOS FD 969/48, Frames 1-13.

Abstract available as PB 100935s. 1p. Mi $1.25, Ph $1.25.

STRUCTURAL ENGINEERING

AVOIDANCE OF CRACKING IN MASONRY CONSTRUCTION OF CONCRETE OR SAND-LIME BRICKS. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. May 1949. 4p table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110086

This paper covers the storage of concrete blocks and bricks and the wetting, mortar, reinforcement, and design of masonry construction to avoid cracking due to shrinkage of the units. DSIR BRD 6.

COMPARISON TEST OF WELDED AND UNWELDED WEDGE JOINT EXTRUSIONS NO. S-101056 AND S-101057, MODEL BC-1, by R. R. Doubleday. Northrop Aircraft, Inc., Hawthorne, Calif. Mar 1941. 8p photos, drawings Mi $1.25, Ph $1.25. PB 100388

Tests were made to compare the ultimate strength of the channel extrusions of the BC-1 wedge joint if they were cut and welded and unwelded specimens of the

same extrusions. One set of specimens were made of S-101056 and S-101057 extrusions unwelded, and one set each was made of S-101056 and S-101057 which were cut in the center thru the cross-section of the extrusion and welded together with the Heliarc method of welding. All specimens were filed and polished smooth. Report no. TR-11.

CONDENSATION IN DOMESTIC CHIMNEYS. Gt. Brit. Dept. of Scientific and Industiral Research. Building Research Station, Watford, England. Apr 1949. 6p drawing Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110085

This digest is concerned with the symphorus and causes of condensation in chimneys and presents recommended measures for damaged chimneys and new construction. DSIR BRD 5.

FESTIGKEIT UND HYGROSKOPISCHE EIGENSCHAFTEN VON LEICHTSTOFFEN (STRENGTH AND HYGROSCOPIC PROPERTIES OF LIGHT MATERIALS), by W. Kuch and W. Rein. Deutsche Versuchsanstalt für Luftfahrt E. V., Berlin. Apr 1944. 59f graphs, tables (Text in German and English) Mi $2.75, Enl Pr $8.75. PB 110049

1. Materials, Aircraft - Tests - Germany 2. Plastics - Tests - Germany 3. Plastics, Wood - Tests - Germany 4. Micro BIOS FD 556/48, Frames 1-29.

INQUIRY INTO DOMESTIC HOT WATER SUPPLY IN GREAT BRITAIN. I. DISTRIBUTION OF WATER HEATING APPLICANCES AND THEIR USE IN WINTER. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. 1950. 54p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 110080

1. Water supply, Hot - Gt. Brit. 2. Water heaters - Gt. Brit. 3. Heating, Hot Water - Gt. Brit. 4. DSIR NB SR 8.

LIFTING OF CLAY AND FLOOR TILES. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Jun 1949. 4p photos, diagrs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110084

A discussion of the causes of failure of clay and tile floors laid on concrete subfloors, with precautions to prevent such failures. DSIR BRD 7.

PLASTERING ON METAL LATHING. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Jan 1950. 6p diagrs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110083

Reports indicate that the most common defects found in plaster on metal lathing are extensive cracking, or of unevenness of the finished surface, or of shelling of the finished coat from the undercoat, or of combinations of these. The methods appropriate for plastering to avoid defects are detailed in this paper. DSIR BRD 14.

PROPOSED STANDARD CONSTRUCTION FOR SOUND-PROOFING BLANKET, by O. R. Rogers. U. S. Air Materiel Command. Engineering Division. Aircraft Laboratory, Wright Field, Dayton, Chio. Dec 1948. 10p tables Mi $1.25, Ph $1.25. PB 100732

A proposal is made for the standardization of construction methods and materials

for soundproofing blankets. Two assemblies are proposed as basic and it is shown that most soundproofing blankets now in use can be satisfactorily made by combinations of those two assemblies. The two assemblies are; 1) a porous trimcloth, a half inch layer of homogenous sound absorbing material, and an imprevious septum; 2) an imprevious septum, a half inch layer of homogenous sound absorbing material, and a backing film. A separate specification for each basic element of the soundproofing blanket should be prepared covering the properties of these elements. Portions of this report may not reproduce well. AAF TSEAC MR 5-4551-7-4.

WEATHER AND THE BUILDING INDUSTRY; RESEARCH CORRELATION CONFERENCE ON CLIMATOLOGICAL RESEARCH AND ITS IMPACT ON BUILDING DESIGN, CONSTRUCTION, MATERIALS AND EQUIPMENT, JAN 11 AND 12, 1950. U. S. Building Research Advisory Board. Apr 1950. 159p photos, diagrs, maps, graphs, tables Available from U. S. National Research Council, Washington 25, D. C. $3.50. PB 110081

The Proceedings are an unusual collection of papers by men whose names have top rank in building technology and the weather sciences. Climatologists demonstrate that techniques have been developed to analyze climate for more accurately both on the broad scale (macroclimate) and for very limited areas (microclimate). These techniques provide frequency data to supplement, and even supplant, the use of "means" and "prevailing conditions" which have heretofore been the foundation of weather design data for use in building research. In addition the report contains penetrating analyses of research in building materials and equipment by men who know the entire field. BRAB CR 1.

TRANSPORTATION EQUIPMENT

Aeronautics

Aircraft

AERONAUTICS: HEAVIER-THAN-AIR AIRCRAFT. A BRIEF OUTLINE OF THE HISTORY AND DEVELOPMENT OF MECHANICAL FLIGHT WITH REFERENCE TO THE NATIONAL AERONAUTICAL COLLECTION, BY M.J.B. DAVY. GT. BRIT. MINISTRY OF EDUCATION. SCIENCE MUSEUM. PART I. HISTORICAL SURVEY. 1949. 92p photos Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 110147

1. Aeronautics - History - Gt. Brit.

ANALYSIS OF AN INDUCTION BLOWDOWN SUPERSONIC TUNNEL, by Jerold M. Bidwell. U. S. National Advisory Committee for Aeronautics. Apr 1950. 28p graphs Mi $2.00, Ph $3.75. PB 100856

Ejector equations and certain assumptions with regard to flow conditions and pressure losses are used to calculate the running times for one type of induction blowdown supersonic tunnel for Mach numbers of 1 to 2 and for reservoir pressures of 2 to 4 atmospheres. Maximum running times are calculated for given values of test-section Mach number, test-section area, reservoir volume, and initial reservoir pressure and temperature. A Reynolds number comparison is made of the induction blowdown tunnel with a direct-discharge blowdown tunnel. NACA TN 2040.

ANNUAL REPORT, 35TH ADMINISTRATIVE REPORT WITHOUT TECHNICAL REPORTS. National Advisory Committee for Aeronautics. 1939. 67p Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.35. PB 99982

1. Aeronautics - Yearbooks

ASPECT RATIO CORRECTIONS IN FLUTTER CALCULATIONS, by L. S. Wasserman. U. S. Air Material Command. Engineering Division. Aircraft Laboratory, Wright Field, Dayton, Ohio. Aug 1948. 35p graphs, tables Mi $2.25, Ph $5.00. PB 100629

Methods of making aspect ratio corrections in flutter calculations are discussed and recommendations regarding the application of these methods to practical problems are made. The general approach of Biot and Boehnlein is used but the aspect ratio is determined by a method depending upon the geometry and deflected shape of the wing and control surfaces. A qualitative discussion of other methods for predicting finite span effects in nonstationary flow is appended. See also PB 100628. AAF TSEAC MR 5-4595-8-5.

CHARTS OF THERMODYNAMIC PROPERTIES OF AIR AND COMBUSTION PRODUCTS FROM 300° TO 3500° R, by Robert E. English and William W. Wachtl. U. S. National Advisory Committee for Aeronautics. Apr 1950. 100p graphs Mi $4.25, Ph $12.50. PB 100858

Convenient nomographic charts are presented that permit determining changes in enthalpy for various processes; namely, compression, combustion at constant pressure, expansion, and heat exchange. Numerical examples illustrate application of charts to thermodynamic computations for gas-turbine engines. NACA TN 2071.

COMPARISON OF THEORETICAL AND EXPERIMENTAL HEAT TRANSFER ON A COOLED 20° CONE WITH A LAMINAR BOUNDARY LAYER AT A MACH NUMBER OF 2.02, by Richard Scherrer and Forrest E. Gowen. U. S. National Advisory Committee for Aeronautics. May 1950. 18p photo, drawing, graphs Mi $1.75, Ph $2.50. PB 110044

Heat-transfer measurements have been made on a cooled 20° cone with a laminar boundary layer at a Mach number of 2.02. Although the constant-temperature test region on the cone was preceded by severe surface-temperature gradients, a comparison of the results with the theory for a constant surface temperature on the basis of heat-transfer parameter, Nusselt number divided by the square root of Reynolds number, indicates agreement within the experimental accuracy over 60 percent of the instrumented length on the cone. NACA TN 2087.

COMPARISON OF THEORETICAL AND EXPERIMENTAL WING BENDING MOMENTS DURING SEAPLANE LANDINGS, by Kenneth F. Merten, José L. Rodriguez, and Edgar B. Beck. U. S. National Advisory Committee for Aeronautics. Apr 1950. 36p drawing, graphs, tables Mi $2.25, Ph $5.00. PB 100685

Comparisons of theoretical and experimental wing bending moments during landing impacts of a small seaplane are presented in the form of time-history curves. The effects of air-load change during impact on the bending moments in the wing are included in the theoretical calculations. NACA TN 2063.

DYNAMIC SIMILITUDE BETWEEN A MODEL AND A FULL-SCALE BODY FOR MODEL INVESTIGATION AT FULL-SCALE MACH NUMBER, by Anshal I. Neihouse and Philip W. Pepoon. U. S. National Advisory Committee for Aeronautics. Mar 1950. 8p Mi $1.25, Ph $1.25. PB 100750

An analysis is given for interpreting results of dynamic tests of a model investigation at full-scale Mach number in terms of the corresponding full-scale body. NACA TN 2062.

EFFECT OF RATE OF CHANGE OF ANGLE OF ATTACK ON THE MAXIMUM LIFT OF A SMALL MODEL, by Paul W. Harper and Roy E. Flanigan. U. S. National Advisory Committee for Aeronautics. Mar 1950. 19p photo, drawing, graphs Mi $1.75, Ph $2.50. PB 100481

A wind-tunnel investigation was conducted of a $\frac{1}{20}$-scale partial model of a conventional fighter airplane through a Mach number range from approximately 0.10 to 0.80 to determine the effects of rate of change of angle of attack on maximum lift. NACA TN 2061.

EFFECTS OF STABILITY OF SPIN-RECOVERY TAIL PARACHUTES ON THE BEHAVIOR OF AIRPLANES IN GLIDING FLIGHT AND IN SPINS, by Stanley H. Scher and John W. Draper. U. S. National Advisory Committee for Aeronautics. May 1950. 49p photos, drawings, graphs, tables Mi $2.50, Ph $6.25. PB 110040

Investigation conducted to determine whether a stable type of parachute can be used as a spin-recovery device and whether it can be safely towed in gliding flight. The investigation included the determination of the effects of increased towline length on the pitching and yawing gyrations of airplanes towing conventional flat unstable parachutes and the effect of porosity on the stability and drag characteristics of both hemispherical and flat parachutes. NACA TN 2098.

EXPERIMENTS IN EXTERNAL NOISE REDUCTION OF LIGHT AIRPLANES, by Leo L. Beranek, Fred S. Elwell, John P. Roberts, and C. Fayette Taylor. U. S. National Advisory Committee for Aeronautics. May 1950. 109p photos, diagrs, graphs, tables Mi $4.50, Ph $13.75. PB 110041

Noise measurements were made on standard light airplanes and on similar airplanes equipped with engine mufflers, propeller reduction gears, and propellers with various numbers of blades and blade shapes. The tests included sound-level recordings of take-offs and overhead flights at 100- and 500-foot altitude. They also included analyses of sound-frequency components with the airplane on the ground from a distance of 50 feet and at various positions around the airplane. NACA TN 2079.

FULL-SCALE INVESTIGATION OF THE AERODYNAMIC CHARACTERISTICS OF A TYPICAL SINGLE-ROTOR HELICOPTER IN FORWARD FLIGHT, by Richard C. Dingeldein and Raymond F. Schaefer. U. S. National Advisory Committee for Aeronautics. 1948. 31p photos, drawings, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 100747

As part of the general helicopter research program being undertaken by the National Advisory Committee for Aeronautics to provide designers with fundamental rotor information, the forward-flight performance characteristics of a typical single-rotor helicopter, which is equipped with main and tail rotors, have been investigated in the Langley full-scale tunnel. The test conditions included operation at tip-speed ratios from 0.10 to 0.27 and at thrust coefficients from 0.0030 to 0.0060. NACA 905.

HORIZONTAL TAIL LOADS IN MANEUVERING FLIGHT, by Henry A. Pearson, William A. McGowan, and James J. Donegan. U. S. National Advisory Committee for Aeronautics. Apr 1950. 32p diagrs, graphs, tables Mi $2.25, Ph $5.00. PB 100811

A method is derived for determining the horizontal tail load following a prescribed maneuver. The tail load is broken down into various components which are examined to determine the maximum values. The method is extended to include suggestions for distributing the load across the span as well as in a chordwise direction. Equations are given for determining the maximum possible pitching angular velocity and pitching acceleration in a pull-up maneuver. NACA TN 2078.

INVESTIGATION OF AIRCRAFT HEATERS. XXXIII. EXPERIMENTAL DETERMINATION OF THERMAL AND HYDRODYNAMICAL BEHAVIOR OF AIR FLOWING ALONG FINNED PLATES, by L.M.K. Boelter, R. Leasure, F. E. Romie, V. D. Sanders, W. R. Elswick, and G. Young. U. S. National Advisory Committee for Aeronautics. Mar 1950. 68p photos, drawings, graphs, tables Mi $3.00, Ph $8.75. PB 100683

An investigation was made of the thermal and hydrodynamical behavior of air flowing along a steam-heated plate to which were attached cylindrical "pin" fins 5/16 inch in diameter and 5/8 inch long. Results are given for a plate having steel fins, one having wooden fins, and a plate without fins which were tested in a variable-width rectangular duct. A method of predicting the performance of a pin-finned plate is presented and compared with experimental results. NACA TN 2072.

KOLEBANIIA KRYLA KONECHNOGO RAZMAKHA V SVERKHZVUKOVOM POTOKE. (VIBRATION OF A WING OF FINITE SPAN IN A SUPERSONIC FLOW), by M. D. Haskind and S. V. Falkovich. Apr 1950. 11p Mi $1.75, Ph $2.50. PB 100718

An investigation has been made of the disturbed motion of a gas for the harmonic vibrations of a thin slightly cambered wing of finite span moving forward with supersonic velocity. In particular, the vibrations of a triangular wing lying within the Mach cone are considered. Translation from Prikladnaya matematika i mekhanika, Vol. XI, 1947. NACA TM 1257.

LAMINAR-BOUNDARY-LAYER OSCILLATIONS AND TRANSITION ON A SLAT PLATE, by G. B. Schubauer and H. K. Skramstad. U. S. National Advisory Committee for Aeronautics. 1948. 34p photos, graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 100742

Oscillations were found during the course of an experiment in which transition from laminar to turbulent flow was being studied on the plate as the turbulence in the wind stream was being reduced to unusually low values by means of damping screens. NACA 909.

LIFT DISTRIBUTION ON A DELTA WING WITH LINEAR TWIST, by Theodore R. Goodman. Cornell Aeronautical Laboratory, Buffalo, N. Y. Feb 1949. 43p graphs Mi $2.50, Ph $6.25. PB 100623

The local pressure coefficient is determined in accordance with the linear theory for a delta wing with linear twist. If the resulting load distribution for the twisted wing is superimposed upon that for an untwisted wing, a twist constant may be found which removes the tip singularity that occurs in the case of the untwisted delta wing.

This twist constant, required for removing the tip singularity, is proportional to the angle of attack of the root section. The drag of the twisted wing with root section at zero angle of attack is also computed. Contract NOrd-10057. Problem CAL-1-A-4. Report no. CAL/CM-524.

MAXIMUM LIFT OF WINGS FROM SUBSONIC TO SUPERSONIC SPEEDS, by Sighard Hoerner. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. n.d. 9p graphs Mi $1.25, Ph $1.25. PB 100627

Results are presented of a study made to determine the effects of subsonic and supersonic speeds on the maximum lift of various airfoil sections. It was concluded that at subsonic speeds, up to **M** = 0.8, the maximum coefficients depend widely on the shape of the sections. AAF TR 5773.

ON THE CONTINUATION OF A POTENTIAL GAS FLOW ACROSS THE SONIC LINE, by Lipman Bers. U. S. National Advisory Committee for Aeronautics. Apr 1950. 58p diagrs Mi $2.75, Ph $7.50. PB 100867

Simple, sufficient conditions are given under which a two-dimensional steady compressible flow can be continued across the line of Mach number 1 as a continuous supersonic flow. Methods for the actual computation of the flow are described. NACA TN 2058.

PRESSURE DISTRIBUTION AND DAMPING IN STEADY ROLL AT SUPERSONIC MACH NUMBERS OF FLAT SWEPT-BACK WINGS WITH SUPERSONIC EDGES, by Harold J. Walker and Mary B. Ballantyne. U. S. Ames Aeronautical Laboratory, Moffett Field, Calif. Mar 1950. 56p diagrs, graphs, tables Mi $2.75, Ph $7.50. PB 100498

A method of analysis, based upon the superposition of a series of conical and quasi-conical fields of pressure derived from linear theory, is presented for calculating the pressure distribution and damping in steady roll in supersonic flow of flat swept-back wings having all edges straight and subsonic. NACA TN 2047.

RIBS-COMPARISON OF SINGLE & BOX TESTED, MODEL C-74, by D. B. McCabe. Douglas Aircraft Co., Inc., Santa Monica, Calif. Oct 1943. 28p photos, drawing, graphs Mi $2.00, Ph $3.75. PB 100396

Tests were made to compare the ultimate strength of the station 498 main rib of the C-74 cargo airplane when tested as a single rib and when tested in a box section. The main rib was loaded to 187-1/2% of applied load in the high angle of attack condition and then in the low angle of attack condition. No failure was apparent in either test. The rib was then tested to destruction in the high angle of attack plus torque condition. The rib carried to 270% applied load at which point one of the cables in the torque system failed. The test was continued with direct loads only, and the rib failed at 315% applied load. The station 498 box-section ribs satisfactorily withstood an ultimate load of 340% applied load plus torque. Report 7939.

ROLLSTABILITÄT DES FLUGZEUGFAHRWERKS UND DIE SICH DARAUS ERGEBENDEN FORDERUNGEN AN DAS SCHWENKBARE RAD (STABILITY OF LANDING GEARS), by L. Huber. Lilienthal Gesellschaft für Luftfahrtforschung, Berlin. 1941. 24p photos, diagr (Text in German and English) Mi $2.00, Ph $3.75. PB 100389

The roll stability of various types of landing gears is discussed. The many possibilities of combined effect of air and ground forces on an aircraft produce such widely varying effects on the taxiing behavior that the landing gear types can be grouped in classes. The investigation assumes a diagonal ground contact of the air-

craft on a plane runway, i.e., start of asymmetrical forces in the landing gear. Aircraft equipped with tail-skid, tail-wheel aircraft, taxiing load and lateral-load force, fixed tail wheel, tail-wheel aircraft insensitive to cross wind, nose-wheel landing gear, tricycle landing gear insensitive to cross wind, fixed nose wheel, and swivel nose wheel are discussed. AAF T-2 T/5641.

SOUND-LEVEL MEASUREMENTS OF A LIGHT AIRPLANE MODIFIED TO REDUCE NOISE REACHING THE GROUND, by A. W. Vogeley. U. S. National Advisory Committee for Aeronautics. 1949. 10p photos, graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.10.
PB 100746

An army liaison-type airplane, representative of personal airplanes in the 150 to 200 horsepower class, has been modified to reduce propeller and engine noise according to know principles of airplane-noise reduction. Noise-level measurements demonstrate that, with reference to an observer on the ground, a noisy airplane of this class can be made quiet-perhaps more quiet than necessary. In order to avoid extreme and unnecessary modifications, acceptable noise levels must be determined. NACA 926.

STABILITY DERIVATIVES AT SUPERSONIC SPEEDS OF THIN RECTANGULAR WINGS WITH DIAGONALS AHEAD OF TIP MACH LINES, by Sidney M. Harman. U. S. National Advisory Committee for Aeronautics. 1949. 18p diagrs, graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 100745

The results for this investigation showed that positive yawing of supersonic speeds may produce a negative rolling moment in contrast to the behavior at subsonic speeds where a positive rolling moment would be produced. NACA 925.

STABILITY DERIVATIVES OF TRIANGULAR WINGS AT SUPERSONIC SPEEDS, by Herbert S. Ribner and Frank S. Malvestuto, Jr. U. S. National Advisory Committee for Aeronautics. 1948. 12p diagrs, graph, table Available from Supt. of Documents, U. S. Government Printing Cffice, Washington 25, D. C. $.15. PB 100741

The analysis of the stability derivatives of low-aspect-ratio triangular wings are subsonic and supersonic speeds, given in NACA TN No. 1423, is extended to apply to triangular wings having large vertex angles and traveling at supersonic speeds. N CA 908.

TEST SURVEY OF SPACE AVAILABLE FOR A PERSONAL SURVIVAL KIT IN LIAISON TYPE AIRCRAFT, by Robert G. Hollifield. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Mar 1950. 9p photos Mi $1.25, Ph $1.25. PB 110067

1. Kits, Aircraft - Survival. 2. Airplanes - Storage 3. AAF TSEAA MR 670-20H.

THEORETICAL ANALYSIS OF THE EFFECT OF TIME LAG IN AN AUTOMATIC STABILIZATION SYSTEM ON THE LATERAL OSCILLATORY STABILITY OF AN AIRPLANE, by Leonard Sternfield and Ordway B. Gates, Jr. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Jan 1950. 29p graphs, table Mi $2.00, Ph $3.75. PB 99878

A method is presented for determining the effect of time lag in an automatic stabilization system on the lateral oscillatory stability of an airplane. The method

is applied to a typical present-day airplane equipped with an automatic pilot sensitive to yawing acceleration and geared to the rudder so that rudder control is applied in proportion to the yawing acceleration. NACA TN 2005.

THEORETICAL SUPERSONIC PRESSURE DISTRIBUTION OVER TAPERED SWEPT-BACK WINGS WITH ARBITRARY AIRFOIL SECTIONS, by W. R. Laster, H. N. Stone, W. M. Sherts. Curtiss-Wright Corporation. Airplane Division. Engineering Dept., Columbus, Ohio. Dec 1948. 80p diagrs, graphs Mi $3.50, Ph $10.00. PB 100625

A method has been developed through which the pressure distribution on swept-back wings at supersonic speed may be obtained. Calculations for a wide range of sweepback angles, aspect ratios, taper ratios and airfoil sections are possible. The method is based on the linearized equation of motion and therefore is limited to thin wings at small angles of attack. The pressure distribution on a 68° swept-back wing has been analyzed and the results are presented. General curves which will greatly simplify future computations are also included. Contract NOrd 8993. Report no. P 537 V-50.

TRANSFORMATION THEORY OF THE PARTIAL DIFFERENTIAL EQUATIONS OF GAS DYNAMICS, by Charles Loewner. U. S. National Advisory Committee for Aeronautics. Apr 1950. 56p graphs, tables Mi $2.75, Ph $7.50. PB 100802

A transformation theory of systems of partial differential equations is developed which allows construction of classes of pressure-density relations depending on arbitrarily many parameters for which the equations governing the flow can be transformed into an essentially simpler form, into the system corresponding to the wave equation in the supersonic case, and finally into that form corresponding to the Tricomi equation in the transonic region. NACA TN 2065.

TRANSIENT ANALYSIS OF VOLTAGE-REGULATED AIRCRAFT D-C SYSTEMS, by D. G. Scorgie. U. S. Naval Research Laboratory, Bellevue, D. C. Sep 1949. 19p diagrs, graphs Mi $1.75, Ph $2.50. PB 100524

The stability of a d-c voltage regulated aircraft system can be determined by the basic principles of feedback amplifier theory. The transfer function of a shunt-wound d-c generator has been defined and calculated, and a method given for accurately measuring the generator transfer function. There is a calculation of the terminal voltage transient resulting from removal of full load. For this purpose a simplified expression for the transfer function of a carbon pile voltage regulator is presented. NRL R 3541.

TWO METHODS FOR STABILITY ANALYSIS OF THE FLUTTER POLYNOMIAL, by Hewitt S. Toney. U. S. Air Materiel Command. Engineering Division. Aircraft Laboratory, Wright Field, Dayton, Ohio. Feb 1946. 17p tables Mi $1.75, Ph $2.50. PB 100628

Method I is an adaptation from the theory of continued fractions which applies the euclidean algorithm for the greatest common divisor to the flutter polynomial and a polynomial derived from it. Method II is a generalization of the Routh-Hurwitz discriminant for application to polynomials with complex coefficients, and consists of an iterative process on the coefficients of the flutter polynomial. AAF TSEAC MR 5-4595-2-4.

VELOCITY DISTRIBUTION ON WING SECTIONS OF ARBITRARY SHAPE IN COMPRESSIBLE POTENTIAL FLOW. III. CIRCULATORY FLOWS OBEYING THE

SIMPLIFIED DENSITY-SPEED RELATION, by Lipman Bers. Syracuse. University, Syracuse, N. Y. Mar 1950. 36p diagrs, graphs, tables Mi $2.25, Ph $5.00.
PB 100500

The method of computing velocity and pressure distributions along wing profiles under the assumption of the simplified density-speed relation, is extended to the case of a non-symmetrical profile and a flow with circulation. The shape of the profile, the speed of the undisturbed flow, and a parameter determining the angle of attack may be prescribed. The problem is reduced to a nonlinear integral equation which can be solved numerically by an iteration method. A numerical example is given. NACA TN 2056.

WEIGHT AND BALANCE STUDY OF THE VAMPIRE MARK III AIRCRAFT, by D. B. Wurtele. Canada. Royal Canadian Air Force. Experimental and Proving Establishment, Rockcliffe, Canada. Feb 1950. 16p drawing, tables Mi $1.75, Ph $2.50.
PB 110046

1. Airplanes - Balance - Canada 2. Airplanes - Weight - Canada 3. Vampire Mark III (Airplane) 4. RCAF EPE 947.

WING PLAN FORMS FOR HIGH-SPEED FLIGHT, by Robert T. Jones. 1947. 5p drawings, graphs Available from the Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.10. PB 97481

1. Wings - Pressure distributions 2. Flight tests - Equipment 3. NACA 863.

WIND-TUNNEL INVESTIGATION AT LOW SPEED OF AN UNSWEPT UNTAPERED SEMISPAN WING OF ASPECT RATIO 3.13 EQUIPPED WITH VARIOUS 25-PERCENT-CHORD PLAIN FLAPS, by Harold S. Johnson and John R. Hagerman. U. S. National Advisory Committee for Aeronautics. Apr 1950. 27p photo, diagrs, graphs, table Mi $2.00, Ph $3.75. PB 100866

Contains results and analysis of force and moment data at low speed to determine the aerodynamic characteristics of an unswept untapered semispan wing of NACA 64A010 section and aspect ratio 3.13 equipped with 25-percent-chord unsealed plain flaps having various spans and spanwise locations. Variations of the wing aerodynamic data with flap span and spanwise location were determined through a large angle-of-attack range. NACA TN 2080.

YC-125 B AIRPLANE, ENGINEERING ACCEPTANCE INSPECTION, by Fred R. Heckerman. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Nov 1949. 5p Mi $1.25, Ph $1.25.
PB 99327

1. YC-125 B (Airplane) 2. Airplanes - Inspection 3. AAF TSEAA MR 720-144.

ZUSAMMENSTELLUNG DER GEWICHTSANTEILE VON MOTORFLUGZEUGEN (WEIGHT ESTIMATION FOR AIRPLANES), by Franz Fourne. Jan 1947. 43p (Text in German and English) Mi $2.50, Ph $6.25. PB 100394

1. Airplanes - Weight - Germany 2. AAF T-2 T/5113.

MAP v-254. Translated by the C. W. Leibiger Research Laboratories, Inc. Jan 1948.

Instruments

ACCURACY OF AIRSPEED MEASUREMENTS AND FLIGHT CALIBRATION PROCEDURES, by Wilbur B. Huston. U. S. National Advisory Committee for Aeronautics.

1948. 40p diagrs, graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.25. PB 100738

The sources of error that may enter into the measurement of airspeed by pitot-static methods are reviewed in detail together with methods of flight calibration of airspeed installations. Special attention is given to the problem of accurate measurements of airspeed under conditions of high speed and maneuverability required by military airplanes. NACA 919.

COMPARISON OF AIRCRAFT CONTROLS FOR PRONE AND SEATED POSITION IN THREE-DIMENSIONAL PURSUIT TASK, by C. W. Brown, E. E. Ghiselli, R. F. Jarrett and E. W. Minium and R. M. U'Ren. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Oct 1949. 11p graphs, tables Mi $1.75, Ph $2.50. PB 100723

One hundred and eleven university students were divided into four groups. Each group was tested on the same psycho-motor pursuit task but utilized different controls. Two of the groups operated their controls over the seated position, and two from the prone position. One of the seated groups used the conventional stick and rudder controls, and the second seated group together with one of the prone-position groups employed a three-dimensional cand control. The second prone-position group used the Amptmann three-dimensional control. The results indicated that for either of the positions, seated or prone, the type of control utilized made little or no difference as far as performance on the pursuit task was concerned. Cover date is Mar 1950. AAF TR 5956.

CONVERGENCY AND GRID NAVIGATION, by J. W. Whelan. Canada. Royal Canadian Air Force. Experimental and Proving Establishment, Rockcliffe, Canada. May 1950. 6p Mi $1.25, Ph $1.25. PB 110141

1. Navigation, Aerial - Canada 2. RCAF EPE 955.

RCAF development report, final D24-2/50.

MAGNITUDE OF FORCES WHICH MAY BE APPLIED BY THE PRONE PILOT TO AIRCRAFT CONTROL DEVICES. 2. TWO-DIMENSIONAL HAND CONTROLS, by C. W. Brown, E. E. Ghiselli, R. F. Jarrett, E. W. Minium and R. M. U'Ren. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Oct 1949. 32p diagrs, drawing, graphs, tables Mi $2.25, Ph $5.00. PB 100735

The maximum forces which could be applied in the vertical direction (up and down) and in a horizontal arc were measured for thirty-seven men in several prone position situations. Much greater forces could be applied to horizontal rotation than to the lifting or depressing movements. Cover date is Feb 1950. AAF TR 5954.

MAGNITUDE OF FORCES WHICH MAY BE APPLIED BY THE PRONE PILOT TO AIRCRAFT CONTROL DEVICES. 3. FOOT CONTROLS, by C. W. Brown, E. E. Ghiselli, R. F. Jarrett, E. W. Minium and R. M. U'Ren. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Oct 1949. 13p diagrs, graphs, tables Mi $1.75, Ph $2.50. PB 100734

1. Aircraft - Controls 2. Pilots, Air - Ability tests - Position 3. AAF TR 5955.

Cover date is Feb 1950.

METHOD OF CALIBRATING AIRSPEED INSTALLATIONS ON AIRPLANES AT TRANSONIC AND SUPERSONIC SPEEDS BY USE OF TEMPERATURE MEASUREMENTS, by John A. Zalovcik. U. S. National Advisory Committee for Aeronautics. Mar 1950.

25p graphs, tables Mi $2.00, Ph $3.75. PB 100370

A method of calibrating the static-pressure source of a pitot-static installation of an airplane at transonic and supersonic speeds by use of only instrumentation in the airplane is described. The method involves principally the use of temperature measurements and is particularly suited for transonic and supersonic speeds at high altitudes. The accuracy of the method is also discussed. NACA TN 2046.

REPORT ON TEST AND EVALUATION OF THE SIEMENS (-LCW) DIRECTIONAL CONTROL UNIT, by E. B. Doersch. U. S. Naval Air Material Center. Aeronautical Instruments Laboratory, Philadelphia, Pa. Aug 1947. 15f photos, diagrs, tables Mi $1.75, Enl Pr $3.75. PB 100416

The German, Siemens directional control unit, designed for use as a directional indicating unit and as a part of an automatic steering system was tested. The unit consists of a slaved gyro with a three phase 500 cycle rotor, a bolometric signal pickoff, drum type dials and an inclinomter. The gyro performed satisfactorily in all tests except the Cardinal Point Stability test where the total drift was 2^{o} in excess. NAM AML 7350.

Engines and Propellers

CHART FOR SIMPLIFYING CALCULATION OF PRESSURE DROP OF A HIGH-SPEED COMPRESSIBLE FLUID UNDER SIMULTANEOUS ACTION OF FRICTION AND HEAT TRANSFER. APPLICATION TO COMBUSTION-CHAMBER COOLING PASSAGES, by Merwin Sibulkin and William K. Koffel. U. S. National Advisory Committee for Aeronautics. Mar 1950. 31p graphs (one separately folded) Mi $2.25, Ph $5.00. PB 100716

A method for calculating the pressure drop of a high-speed compressible fluid in a constant-area duct under simultaneous action of friction and heat transfer is developed and presented in the form of a working chart. The method is based on an assumption of an exponential longitudinal temperature distribution. The assumed temperature distribution can be made to closely approximate, in one or two steps, the temperature distributions found in combustion-chamber cooling passages of ram jets and tail-pipe burners. NACA TN 2067.

CORRELATION OF EFFECTS OF FUEL-AIR RATIO, COMPRESSION RATIO, AND INLET-AIR TEMPERATURE ON KNOCK LIMITS OF AVIATION FUELS, by Leonard K. Tower and Henry E. Alquist. U. S. National Advisory Committee for Aeronautics. Apr 1950. 57p drawings, graphs, tables Mi $2.75, Ph $7.50. PB 100803

By means of a relation between knock-limited effective end-gas density and end-gas temperature calculated from inlet conditions, the effects of fuel-air ratio on knock-limited charge flow and power of a supercharged engine were correlated with those of inlet-air temperature and compression ratio. When these curves of knock-limited effective end-gas density with knock-limited effective end-gas temperature were used to compute charge flow for eight fuels over a wide range of conditions, the mean error in calculated charge flow as compared with experimentally determined charge flow ranged from 2.7 percent for 28-R fuel to 8.6 percent for triptane. NACA TN 2066.

CYLINDER-HEAD TEMPERATURES AND COOLANT HEAT REJECTION OF A MULTI-CYLINDER LIQUID-COOLED ENGINE OF 1650-CUBIC-INCH DISPLACEMENT, by John H. Povolny, Louis J. Bogdan, and Louis J. Chelko. U. S. Lewis Flight

Propulsion Laboratory, Cleveland, Ohio. Apr 1950. 61p photos, drawings, graphs, tables Mi $3.00, Ph $8.75. PB 100740

The results of an extensive investigation of the cooling characteristics of a 1650-cubic-inch-displacement engine are presented. Plots of the cylinder-head-temperatures and coolant heat rejection against the primary engine and coolant variables are shown. Correlations of these data with the pertinent engine and coolant variables are included for convenience in application. NACA TN 2069.

EFFECT OF HEAT AND POWER EXTRACTION ON TURBOJET-ENGINE PERFORMANCE. I. ANALYTICAL METHOD OF PERFORMANCE EVALUATION WITH COMPRESSOR-OUTLET AIR BLEED, by Reece V. Hensley, Frank E. Rom, and Stanley L. Koutz. U. S. National Advisory Committee for Aeronautics. Mar 1950. 52p graphs Mi $2.75, Ph $7.50. PB 100749

A method of analysis is developed for computing the effect of air bleed from the compressor outlet on performance of a turbojet engine. The method involves matching of experimentally determined component characteristics. The results of the analysis, based on typical axial-flow-type turbojet-engine component characteristics, are presented in terms of pumping characteristics and in terms of conventional propulsion parameters, such as thrust and specific fuel consumption. NACA TN 2053.

FREE-FLIGHT-TUNNEL INVESTIGATION OF DYNAMIC LONGITUDINAL STABILITY AS INFLUENCED BY THE STATIC STABILITY MEASURED IN WIND-TUNNEL FORCE TESTS UNDER CONDITIONS OF CONSTANT THRUST AND CONSTANT POWER, by Robert O. Schade. U. S. National Advisory Committee for Aeronautics. Apr 1950. 14p drawings, graphs Mi $1.75, Ph $2.50. PB 100744

An investigation has been conducted to determine the dynamic longitudinal stability as influenced by the static stability measured in wind-tunnel force tests under conditions of constant thrust and constant power. The amount of static stability was varied in flight tests by changing the power applied to a pusher propeller with an offset thrust axis and by shifting the center of gravity of the model. NACA TN 2075.

HOVERING AND LOW-SPEED PERFORMANCE AND CONTROL CHARACTERISTICS OF AN AERODYNAMIC-SERVOCONTROLLED HELICOPTER ROTOR SYSTEM AS DETERMINED ON THE LANGLEY HELICOPTER TOWER, by Paul J. Carpenter and Russell S. Paulnock. U. S. National Advisory Committee for Aeronautics. May 1950. 27p photos, graphs, tables Mi $2.00, Ph $3.75. PB 110043

The rotor system investigated is a servocontrol type with blades fastened rigidly at the hub and twisted outboard by auxiliary airfoils called flaps to obtain pitch control. The basic performance and control characteristics of this rotor system were obtained for the hovering condition and for a range of wind velocities from 0 to 30 miles per hour. The transient response of the rotor to various control movements was also measured. NACA TN 2086.

SOUND MEASUREMENTS FOR FIVE SHROUDED PROPELLERS AT STATIC CONDITIONS, by Harvey H. Hubbard. U. S. National Advisory Committee for Aeronautics. Apr 1950. 29p photos, graphs, tables Mi $2.00, Ph $3.75. PB 100857

Sound-pressure measurements are reported for five shrouded propellers and are compared with those for an unshrouded propeller operating at approximately the same rotational speed and power. The maximum total sound pressure produced by a two-blade shrouded propeller is found to vary approximately from one-half to

twice as much as that for an unshrouded two-blade propeller, depending on whether the flow at the shroud surface is unseparated or separated, respectively. Shroud chord is found not to be critical except insofar as the aerodynamic considerations are affected. NACA TN 2024.

THEORETICAL ANALYSIS OF VARIOUS THRUST-AUGMENTATION CYCLES FOR TURBOJET ENGINES, by Bruce T. Lundin. U. S. National Advisory Committee for Aeronautics. May 1950. 52p drawings, graphs Mi $2.75, Ph $7.50. PB 110038

Results of analytical studies of tail-pipe-burning, water-injection, and bleedoff methods of thrust augmentation are presented that provide an insight into operational characteristics and summarize typical turbojet performance for a range of flight conditions. For the tail-pipe-burning method, particular attention is given to the effect of burner-design parameters on normal and augmented performance. Water injection is considered for injection into the compressor inlet and the combustion chambers for a range of injected water-air ratios. Performance with bleedoff is presented for a wide range of bleedoff-flow rates for axial- and centrifugal-flow engines having constant- and variable-area exhaust nozzles. NACA TN 2083.

Aerodynamics

AERODYNAMIC CHARACTERISTICS AT REYNOLDS NUMBERS OF 3.0×10^6 AND 6.0×10^6 OF THREE AIRFOIL SECTIONS FORMED BY CUTTING OFF VARIOUS AMOUNTS FROM THE REAR PORTION OF THE NACA 0012 AIRFOIL SECTION, by Hamilton A. Smith and Raymond F. Schaefer. U. S. National Advisory Committee for Aeronautics. Apr 1950. 18p graphs, tables Mi $1.75, Ph $2.50. PB 100743

Lift, drag, and pitching-moment characteristics at Reynolds numbers of 3.0×10^6 and 6.0×10^6 are presented for two airfoil sections formed by cutting off 1.5 and 4.0 percent chord from the trailing edge of the NACA 0012 section, and at 6.0×10^6 for a section formed by removing 12.5 percent chord. Aerodynamic data are also given for the section with 1.5 percent chord removed having rivet heads attached near the trailing edge. Data are given for both the smooth and rough surface conditions. NACA TN 2074.

AMPLITUDENVERTEILUNG UND ENERGIEBILANZ DER KLEINEN STÖRUNGEN BEI DER PLATTENSTRÖMUNG (AMPLITUDE DISTRIBUTION AND ENERGY BALANCE OF SMALL DISTURBANCES IN PLATE FLOW), by H. Schlichting. 1935. 44p graphs, tables Mi $2.50, Ph $6.25. PB 100854

The distribution of the correlation coefficient and of the amplitude of the disturbance velocities is calculated as a function of the distance from the wall for two neutral disturbances, one at the lower and one at the upper branch of the neutral stability curve. The energy balance of the disturbance motion is also investigated and it is found that as required for neutral stability the energy of the disturbance motion that is dissipated by viscosity is equal to the energy transferred to the disturbance motion from the main flow during one cycle. Translation from Nachrichten von der Gesellschaft der wissenschaften zu Göttingen, neue folge, band 1, no. 4, 1935. NACA TM 1265.

EFFECT OF ASPECT RATIO ON THE AIR FORCES AND MOMENTS OF HARMONICALLY OSCILLATING THIN RECTANGULAR WINGS IN SUPERSONIC POTENTIAL FLOW, by Charles E. Watkins. U. S. National Advisory Committee for Aeronautics. Apr 1950. 52p diagrs, graphs Mi $2.75, Ph $7.50. PB 100681

The linearized velocity potential for a thin, flat, rectangular wing undergoing sinusoidal torsional oscillations simultaneously with sinusoidal vertical translations in a supersonic stream is derived in the form of an infinite series in terms of a frequency parameter. Simple closed expressions that include the reduced frequency to the third power are given for the velocity potential, components of total force and moment coefficients, and components of section force and moment coefficients. It is found that the components of force and moment coefficients for small-aspect-ratio wings may deviate considerably from those for an infinite-aspect-ratio wing. NACA TN 2064.

METHOD OF EXPERIMENTALLY DETERMINING RADIAL DISTRIBUTIONS OF VELOCITY THROUGH AXIAL-FLOW COMPRESSOR, by Harold B. Finger. U. S. National Advisory Committee for Aeronautics. Apr 1950. 25p diagrs, graphs Mi $2.00, Ph $3.75. PB 100684

A method is presented for determining the velocity distributions downstream of any compressor blade row if the outlet total temperatures, total pressures, and relative flow angles are known. The method has been applied to the determination of the velocities and the pressures in a 10-stage compressor and has indicated good agreement with the measured wall-static pressures. NACA TN 2059.

RECURRENCE MATRIX SOLUTION FOR THE DYNAMIC RESPONSE OF AIRCRAFT IN GUSTS, by John C. Houbolt. U. S. National Advisory Committee for Aeronautics. Mar 1950. 90p tables, graphs Mi $3.75, Ph $11.25. PB 100748

Through the use of difference equations and matrix notation a systematic procedure is developed for the calculation of the structural response of an aircraft flying through a gust. The method takes into account wing bending and twisting flexibilities, fuselage flexibility, vertical and pitching motion of the airplane, and some tail forces. Strip theory is used, but approximate three-dimensional and compressibility corrections can be made without difficulty. Either sharp-edge or arbitrary gusts may be treated. NACA TN 2060.

Marine Transportation

MANUAL, CHAPTER 41: MAIN PROPELLING MACHINERY. SECTION I. TURBINES. U. S. Bureau of Ships. Aug 1947. 35p diagrs, graphs, drawings, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.25. PB 110094

1. Ships - Machinery - Operation 2. Ships - Propulsion 3. Turbines, Marine 4. NAVSHIPS 250-000-41S1.

MANUAL, CHAPTER 41: MAIN PROPELLING MACHINERY. SECTION III: RECIPROCATING STEAM ENGINES. U. S. Bureau of Ships. Sep 1946. 29p photo, diagrs, graph, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 110094r2

1. Ships - Machinery - Operation 2. Ships - Propulsion 3. Engines, Reciprocating - Marine 4. NAVSHIPS 250-000-41S3.

MANUAL, CHAPTER 41: MAIN PROPELLING MACHINERY. SECTION IV: ELECTRIC PROPULSION INSTALLATIONS. U. S. Bureau of Ships. Oct 1946. 79p drawings, graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.30. PB 110094r3

1. Ships - Machinery - Operation 2. Ships - Propulsion 3. Ships - Electrical installations 4. NAVSHIPS 250-000-41S4.

MANUAL, CHAPTER 41: MAIN PROPELLING MACHINERY. SECTION V: INTERNAL COMBUSTION ENGINES (GASOLINE TYPE). U. S. Bureau of Ships. Feb 1946. 17p diagrs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 110094r4

1. Ships - Machinery - Operation 2. Ships - Propulsion 3. Engines, Internal combustion 4. Engines, Gasoline 5. NAVSHIPS 250-000-41S5.

ON THE STRENGTH OF SHIPS AT SEA, by Norman H. Jasper. n.d. 18p Mi $1.75, Ph $2.50. PB 100727

1. Ships.

Submitted to the U. S. Naval Institute.

THEORIE UND ENTWURF FREIFAHRENDER SCHIFFSSCHRAUBEN, by Herman Lerbs. n.d. 70p fold graphs (Text in German) Mi $3.00, Ph $8.75. PB 98593

1. Propellers, Marine - Design 2. Propellers, Marine - Theory.

Some pages will not reproduce well. Photostat from Library, David W. Taylor model Basin, Navy Dept.

VERALAG DER VERRICHTINGEN OVER DE JAREN 1944-1945-1946 (INGEVOLGE ART. 5 DER STATUTEN) VAN DE STICHTING HET NEDERLANDS SCHEEPSBOUWKUNDIG PROEFSTATION TE WAGENINGEN. (REPORT OF THE ACTIVITIES FOR THE YEARS 1944-1945-1946 (ACCORDING TO ARTICLE 5 OF THE STATUTES) OF THE FOUNDATION OF THE NETHERLANDS MODEL BASIN IN WAGENINGEN). PUBLISHED BY BOARD OF DIRECTORS. Netherlands. Scheepsbouwkundig Proefstation. May 1947. 25p tables Mi $2.00, Ph $3.75. PB 110063

1. Shipbuilding - Netherlands 2. Model basins - Netherlands 3. STS 379.

MISCELLANEOUS

FIELD TEST OF THE BAG, CASUALTY, EVACUATION (EXPERIMENTAL), by Jack C. Green and Frank K. Smith. U. S. Air Force. Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska. Feb 1950. 7p photos, tables Mi $1.25, Ph $1.25. PB 100917

Description of the bag and method of testing are given, followed by a discussion and conclusion with the recommendation that the project be continued. Project no. 21-01-023.

LIST OF RESEARCH REPORTS by Dr. Reppe and his assistants, 1938-1944. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1945. 19f (Text in German) Mi $1.75, Enl Pr $3.75. PB 110035

1. Research - Bibliography - Germany 2. BIOS FR 1047 appendix 3. Micro BIOS FD 5391/47, Frames 1-21.

Abstract available as PB 110035s. 1p. Mi $1.25, Ph $1.25. Appendix to BIOS FR 1047 (PB 92196)

MANUAL, CHAPTER 35: LAUNDRY. U. S. Bureau of Ships. Aug 1947. 17p tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 110095
1. Laundries 2. NAVSHIPS 250-000-35.

SUMMARY TABLES OF BIOLOGICAL TESTS, SPONSORED BY THE CHEMICAL-BIOLOGICAL COORDINATION CENTER. U. S. National Research Council. Chemical-Biological Coordination Center. Feb 1950. 83p tables Available free from National Research Council. Chemical-Biological Coordination Center, 2101 Constitution Ave., Washington, D. C. PB 100191
1. Bactericides - Tests 2. Arachnidicides - Tests 3. Fungicides - Tests 4. Insecticides - Tests 5. Plants - Growth regulators - Tests 6. Snails - Control - Tests 7. Rats - Repellents - Tests 8. Malaria - Therapy - Tests 9. Cancer - Chemotherapy - Tests 10. Rickettsia - Therapeutic agents - Tests.
Volume 2, no. 1.

VISIT TO SEVERAL GERMAN FACTORIES, by Ten Bruggencate, Pabbreuwe, Ochtman. May 1947. 26f Mi $2.00, Enl Pr $5.00. PB 100826
1. Bicycles - Chains - Manufacture - Germany 2. Calendars - Manufacture - Germany 3. Flags - Manufacture - Germany 4. Organs - Pipes - Manufacture - Germany 5. Pipe cleaners - Manufacture - Germany 6. Sewing machines - Parts - Manufacture - Germany 7. Shoes - Eyelets - Germany 8. Textiles - Finishing - Germany 9. Umbrellas - Manufacture - Germany 10. Giesecke, Carl & Sohn, Gottingen, Germany 11. Phoenix Nähmaschinen A. G. Baer & Rempel, Bielefeld, Ger. 12. Eck, Joseph & Söhne, Dusseldorf, Ger. 13. Fahnerichter, Pingstdorf, Ger. 14. Bonner Fahrenfabrik, Bonn, Ger. 15. Stocke Metallwarenfabrik, Wuppertal, Ger. 16. TOR 50 17. Micro BIOS FD 3281/48, Frames 1-24.

PATENTS

Apparel

INDIVIDUAL SUBMARINE SUIT (APARATO PERSONAL SUBMARINO) NOV 1949. TRANSLATED BY F. RIZZO, by Emilio Santana. Mar 1950. 22p drawings Mi $2.00, Ph $3.75. PB 100894
1. Suits, Submarine - Patents - Spain 2. NAVSHIPS T372.

Chemicals and Allied Products

CORRESPONDENCE AND PATENT SPECIFICATIONS RELATING TO HALOGENATED OLEFINES AND HALOGENATED IMINO COMPOUNDS. Deutsche Gold- und Silberscheideanstalt, A. G., Frankfort, Ger. 1942-1944. 37f (Text in German) Mi $2.25, Enl Pr $6.25. PB 110013
1. Halogen compounds - Preparation - Patents - Germany 2. Patents - Germany D 89 500 IVc/12 3. Patents - Germany D89 499 IVd/12o 4. Micro BIOS FD 2465/49, Frames 1-36.
Abstract available as PB 110013s. 1p. Mi $1.25, Ph $1.25.

PATENT APPLICATIONS AND CORRESPONDENCE RELATING TO HYDROCARBON SYNTHESIS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1944. 310f (Text in German) Mi $9.00, Enl Pr $41.25. PB 110051
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Abstract available as PB 110051s. 2p. Mi $1.25, Ph $1.25.

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Abstract available as PB 110053s. 1p. Mi $1.25, Ph $1.25.

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